Schlumberger

Company: Southern California Gas Company

Well: FF-32F (IW 62)

Field: Aliso Canyon

County: Los Angeles State: California

County: Los Angeles
Field: Aliso Canyon
Location: 1557' South & 1829' East
Well: FF-32F (IW 62)
Company: Southern California Gas Company

Ultrasonic Imager

Gamma Ray - CCL

6-5/8" 28# casing

Location:			
1557' South & 1829' East From Station 84		Elev.: K.B. 2010.00 ft G.L. 1995.00 ft D.F.	
Permanent Datum:	Ground Level	Elev.:	1995.00 f
Log Measured From:	Kelly Bushing	15.00 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		

API Serial No.	Section:	Township:	Range:
037-21313-02	27	3N	16W

Logging Date		19-Jul-2016	
Run Number		One	
Depth Driller		6954.00 ft	
Schlumberger Depth		6947.00 ft	
Bottom Log Interval		6947.00 ft	
Top Log Interval		15.00 ft	
Casing Fluid Type		Water	
Salinity			
Density		8.6 lbm/gal	
Fluid Level		8.00 ft	
BIT/CASING/TUBING STRING			
Bit Size		11.00 in	
From		724.00 ft	
To		7029.00 ft	
Casing/Tubing Size		6.625 in	
Weight		28 lbm/ft	
Grade		L80	
From		0.00 ft	
To		6954.00 ft	
Max Recorded Temperatures			
Logger on Bottom	Time	19-Jul-2016 09:00:00	
Unit Number	Location:	3189 Ventura	
Recorded By		John Lopez	
Witnessed By		Mr Tom McMahon	

Disclaimer

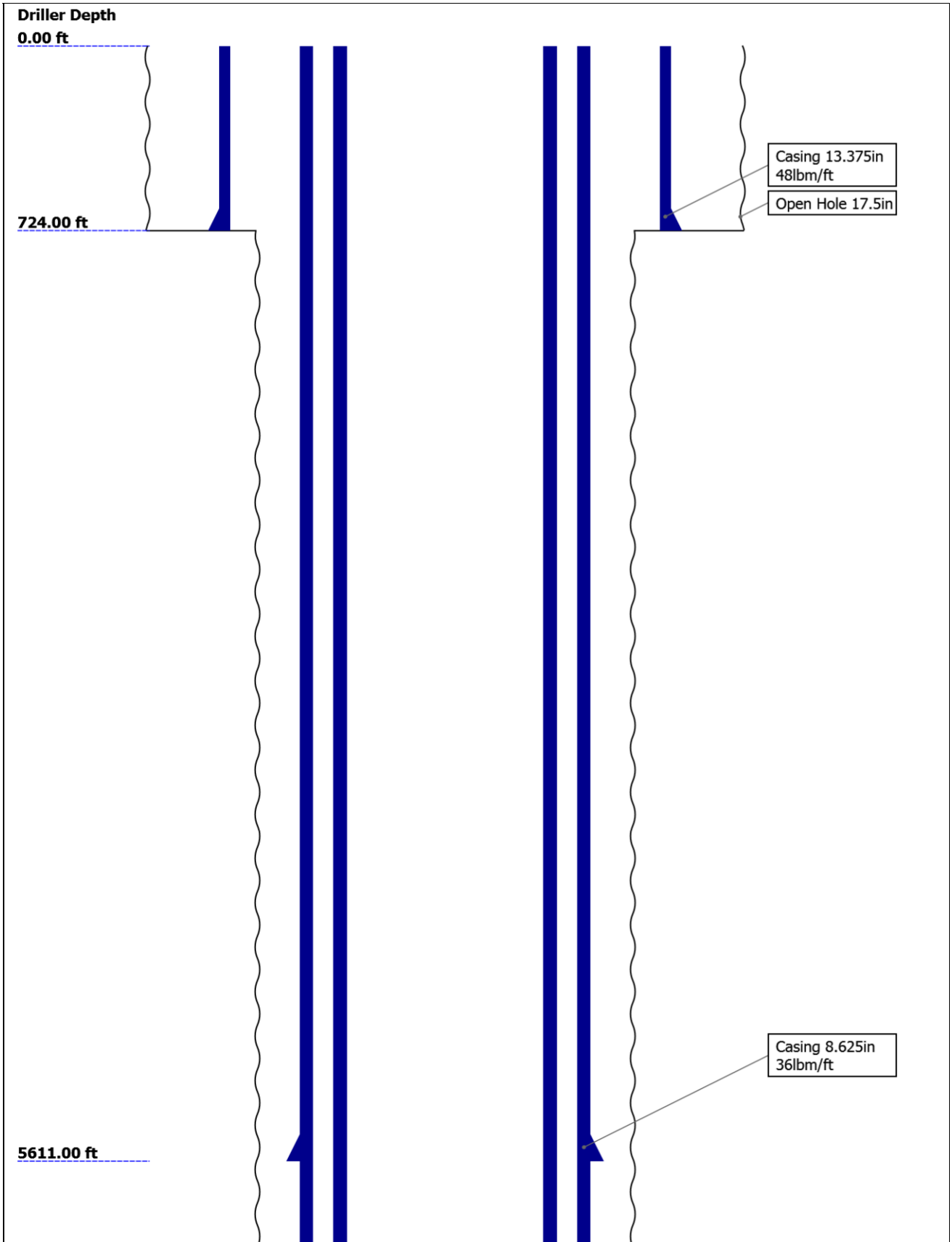
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

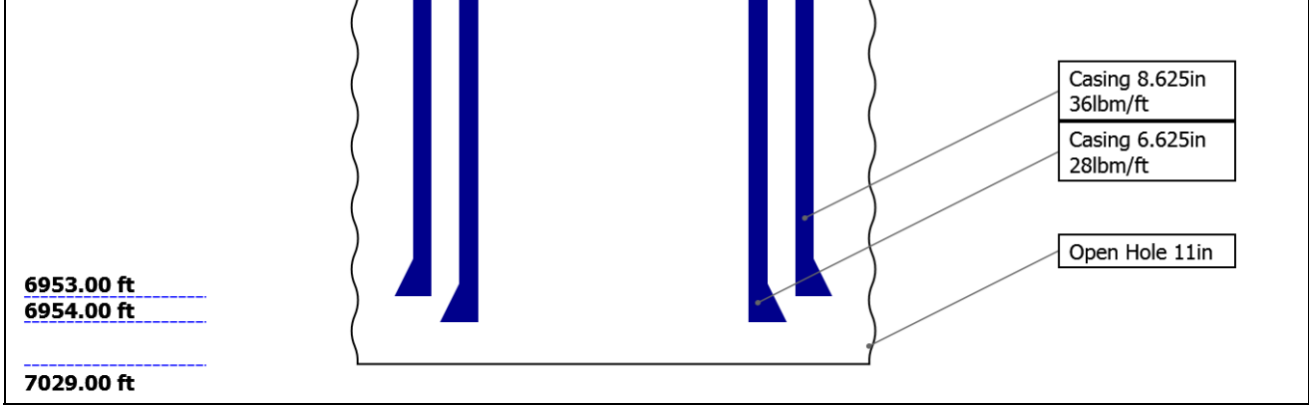
Contents

1. Header
2. Disclaimer
3. Contents
4. Well Sketch
5. Borehole Size/Casing/Tubing Record
6. Remarks and Equipment Summary
7. Job Event Summary
8. USI Fluid Properties Measurement
9. Composite1
   9.1 Integration Summary
   9.2 Software Version
   9.3 Composite Summary
   9.4 Log (LBV1_USI-VDL (DSLT) Cement 7inch)
   9.5 Parameter Listing
10. ONE
   10.1 Integration Summary
   10.2 Software Version
12. Composite 1 Cement Log 2 IN = 100 FT
   12.1 Integration Summary
   12.2 Composite Summary
   12.3 Log (LBV1_USI Cement 7inch)
13. Composite 1 Corrosion 5 in = 100 ft
   13.1 Integration Summary
   13.2 Composite Summary
   13.3 Log (LBV1_USI Corrosion 7inch)
14. ONE Very Hi_Res Repeat
   14.1 Integration Summary
   14.2 Software Version
   14.3 Composite Summary
   14.4 Log (LBV1_USI Corrosion 7inch)
   14.5 Parameter Listing
15. Composite 1 USI Compressed Goodwin
   15.1 Integration Summary
   15.2 Composite Summary

10.3 Composite Summary
10.4 Log (LBV1_USI-VDL (DSLT) Cement 7inch)
10.5 Parameter Listing
11. Composite 1 Main Pass 5 IN = 100 FT
11.1 Integration Summary
11.2 Composite Summary
11.3 Log (LBV1_USI Composite 7inch)
15.3 Log (Import of USI Goodwin)
16. XYZ (USI Fluid Acoustic Slowness vs Depth)
17. XYZ (USI Theoretical Acoustic impedance of mud vs Depth)
18. Tail

Well Sketch





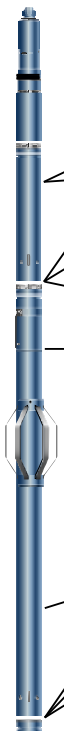
Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	17.5	11				
Top Driller (ft)	0	724				
Top Logger (ft)	0	724				
Bottom Driller (ft)	724	7029				
Bottom Logger (ft)	724	7029				
Casing						
Size (in)	13.375	8.625	8.625	6.625		
Weight (lbm/ft)	48	36	36	28		
Inner Diameter (in)	12.715	7.825	7.825	5.791		
Grade	H40	K55	N80	L80		
Top Driller (ft)	0	0	5611	0		
Top Logger (ft)	0	0	5611	0		
Bottom Driller (ft)	724	5611	6953	6954		
Bottom Logger (ft)	724	5611	6953	6954		

Remarks and Equipment Summary

ONE: Toolstring

Equip name	Length	MP name	Offset
LEH-QT:2867	**59.51**	Red	
LEH-QT:2867			
DTC-H	**56.59**	**CTEM**	**55.69**
ECH-KC		**HV**	**0.00**
DTC-H		**TelStatus**	**53.59**
		ToolStatus	**53.59**
HGNS-H:3923	**53.59**	**Temperature**	**53.57**
HGNH:4819		**GR**	**52.85**
NPV-N			
NSR-F:5002			
HACCZ-H:3923			
HGNS-H:3923			
HMCA-H			
		CNL Porosity	**46.52**
		HGNS	**44.18**
		HMCA	**44.18**
		Accelerometer	**0.00**
AH-184[	**44.18**		



ONE: Remarks

Rig: Rival 12

Toolstring ran as per toolsketch.

Two centralizers on USIS and two CME-Y used to centralize ultrasonic tool.

Thank you for choosing Schlumberger!

Tool ran as per tool sketch
Thank you for choosing Schlumberger
Rig Ensign 335 Crew: Coupart, Allen

Two centralizers run on USIS, and 4 Gemco's run to centralize the USIT and CBL tool

Correlated to Gamma Ray on Schlumberger USIT Log dated 23-Jun-2010
6 5/8" Liner run, cemented and logged

Anomolies repeated in Very Hi-Res, Plug set in 4.5" liner, Rig tagged at 6954 ft, wireline tagged at 6947 ft

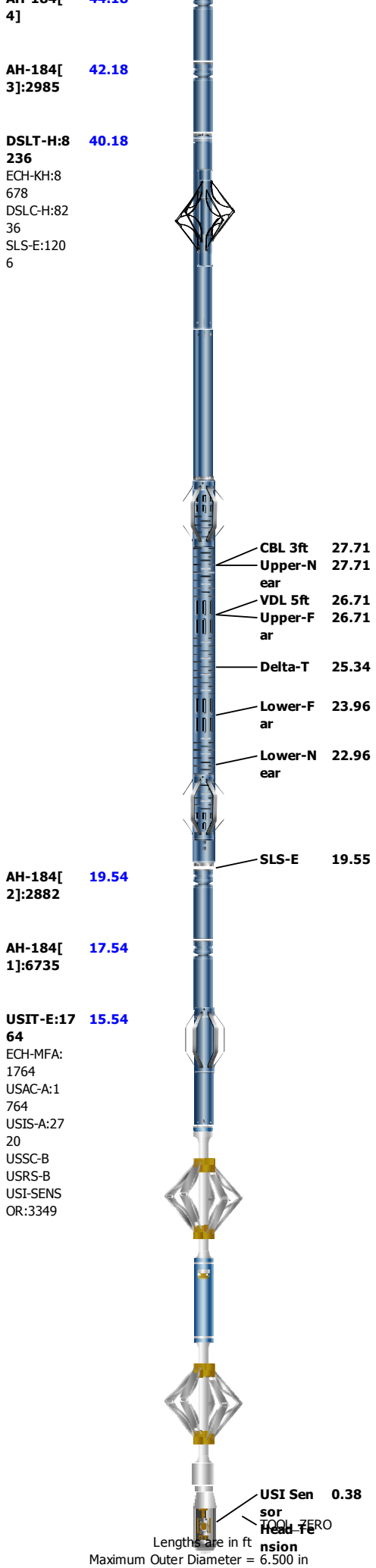
Logging objective, Corrosion and Cement Usit logged at 10 degree 1.5" Speed 2800 fph, Hi Res 10 Degree 0.6" 1200 fph

6 5/8" liner cemented with 762.98 ft3 13.5 lb/gal cement lead and 59.11 ft3 14.8 lb/gal tail cement, bumped the plug and held fo

8 5/8" casing ID is 7.825" , 6 5/8" casing OD

8 5/8" casing ID is 7.825", 6 5/8" casing OD 6.625", clearance is 1.2 inch total, if centralized, gives 0.6" clearance.

No pressure applied during log



Lengths are in ft
Maximum Outer Diameter = 6.500 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Job Event Summary

Event	Time	Duration	Interval	Remark
Log[3]:Down	Jul-19-2016 07:27	01:09:59	396.18 - 6955.72 ft	FPM
Log[6]:Up	Jul-19-2016 09:08	00:15:50	6947.17 - 6499.92 ft	Repeat pass
Log[7]:Up	Jul-19-2016 09:27	03:45:15	6947.42 - 85.65 ft	Main Log Pass
Log[8]:Up	Jul-19-2016 12:55	00:14:32	6956.89 - 6776.68 ft	Hi Res repeat
Log[9]:Up	Jul-19-2016 13:55	00:12:34	319.95 - -4.47 ft	Surface Log

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[7]:Up	6947.42	85.65

Fluid Velocity = "Automatic".
CFVL equals DFSL channel

Start Depth(ft)	Stop Depth(ft)	Start Value(us/ft)	End Value(us/ft)

Mud Impedance = "FreePipe Norm.".
Free Pipe normalization zone is : 5.96m(19.57ft) to 14.79m(48.53ft)
MUD_N_FRP = 1.06
DFD = 1.03g/cm3(8.60lbm/gal)
CZMD median computed in free pipe normalization interval = 1.68 MRayl

Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)

Composite 1

Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[7]:Up	Up	85.65 ft	6947.43 ft	19-Jul-2016 9:27:50 AM	19-Jul-2016 12:13:06 PM	ON	7.00 ft	No
ONE	Log[9]:Up	Up	12.53 ft	336.93 ft	19-Jul-2016 1:55:07 PM	19-Jul-2016 2:07:42 PM	ON	17.00 ft	No

All depths are referenced to toolstring zero

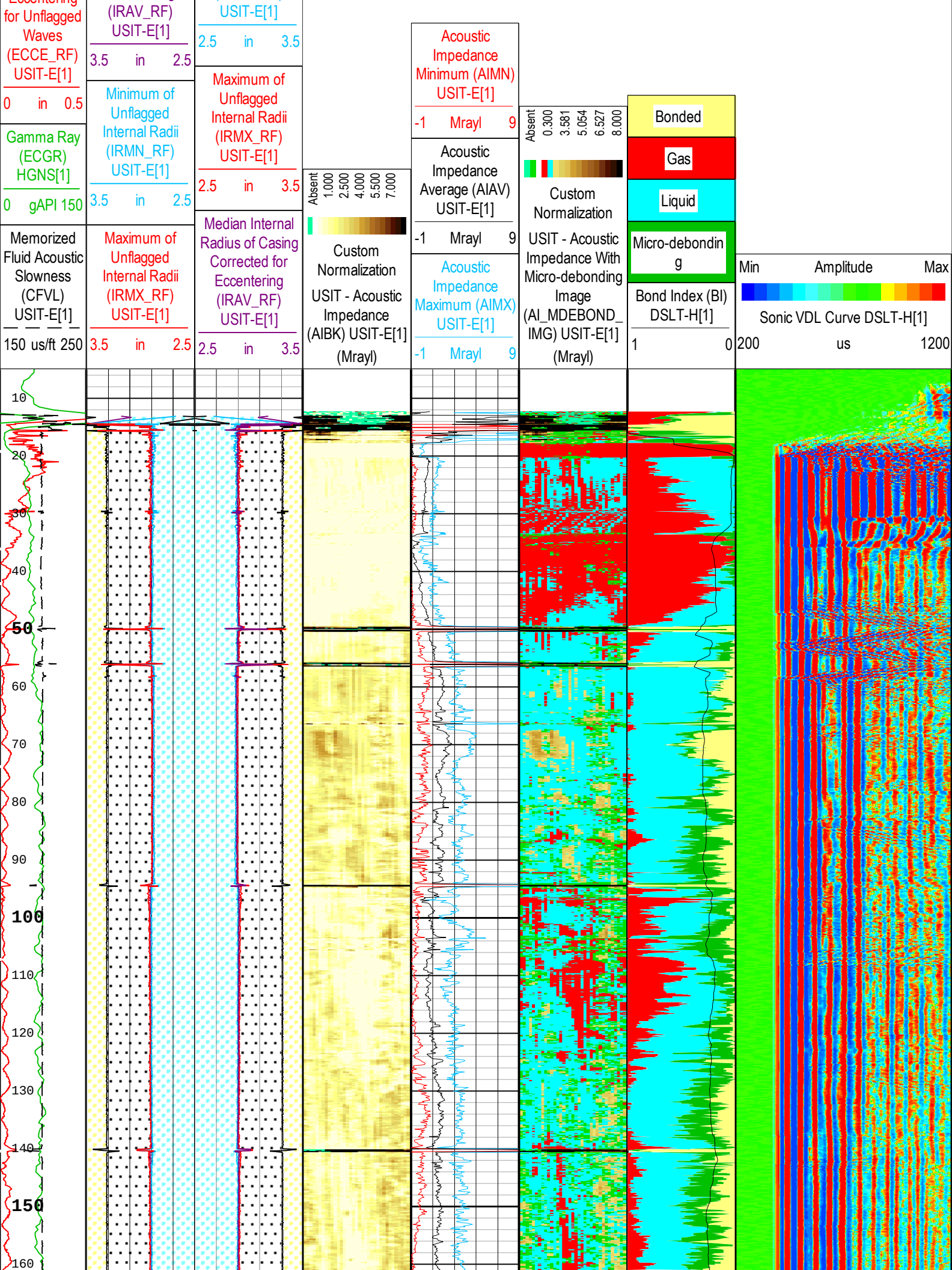
Log

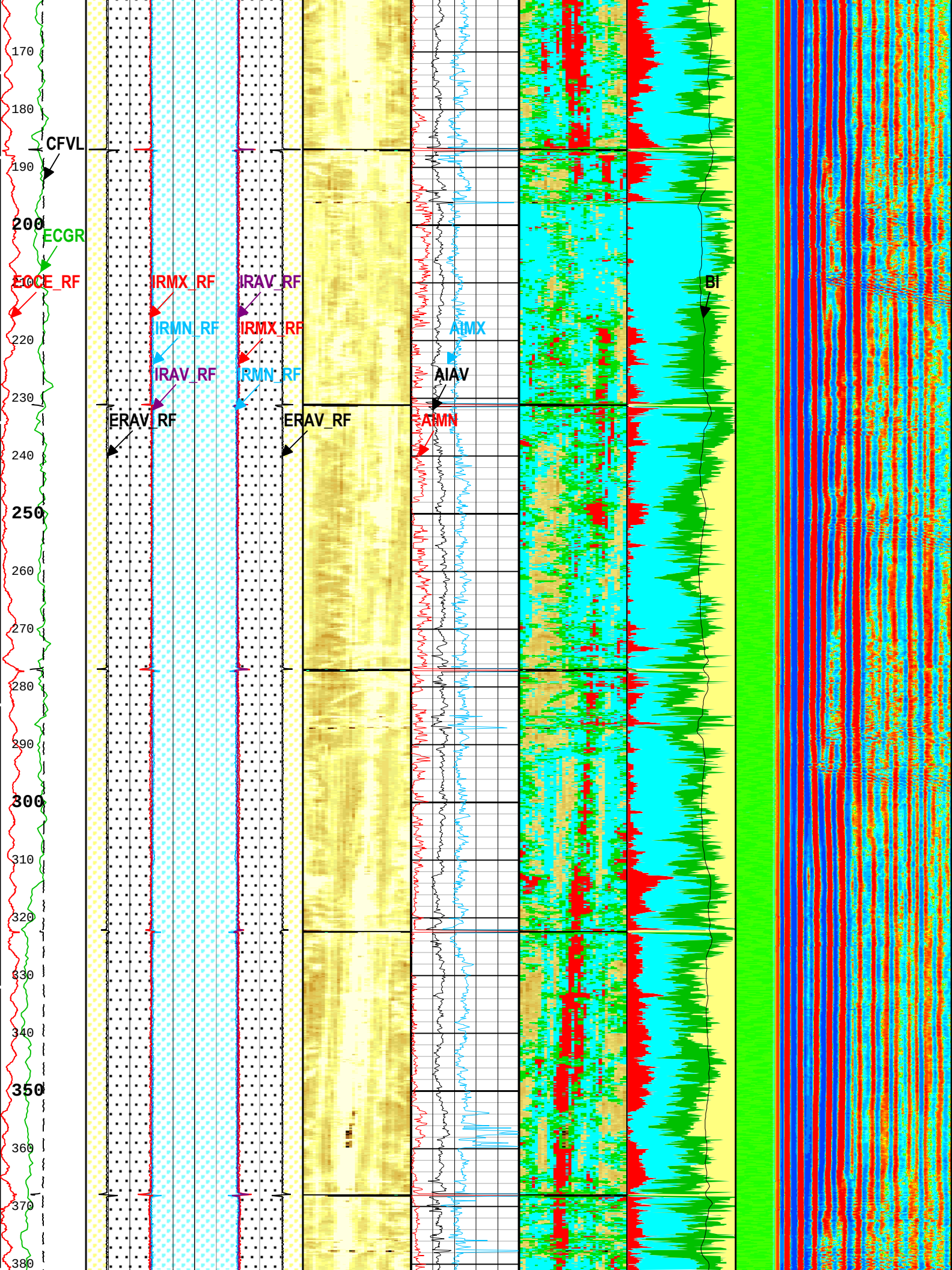
Company:Southern California Gas Company Well:FF-32F (IW 62)
Composite 1:S006

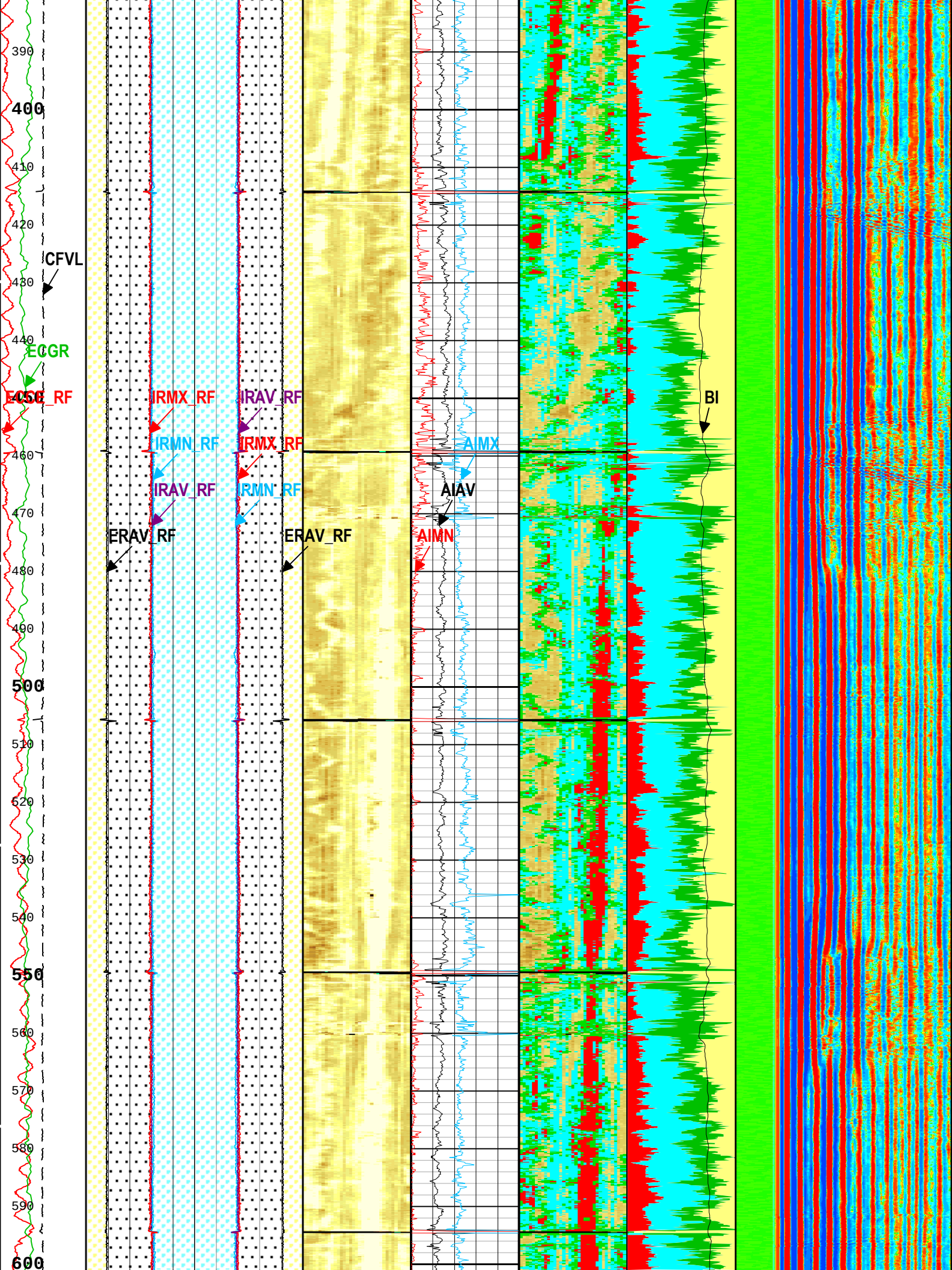
Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 20-Jul-2016 09:39:30

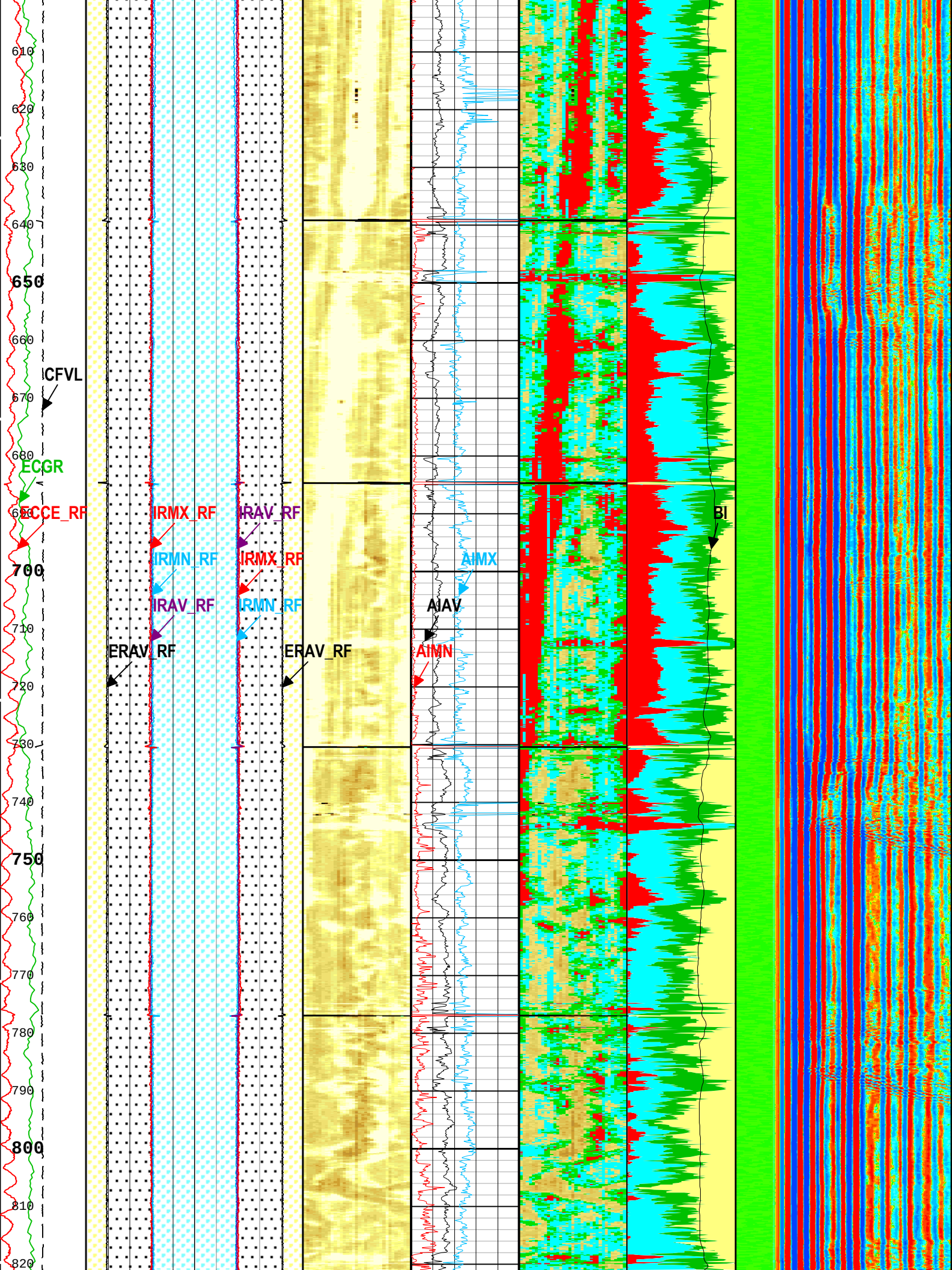
TIME_1900 - Time Marked every 60.00 (s)

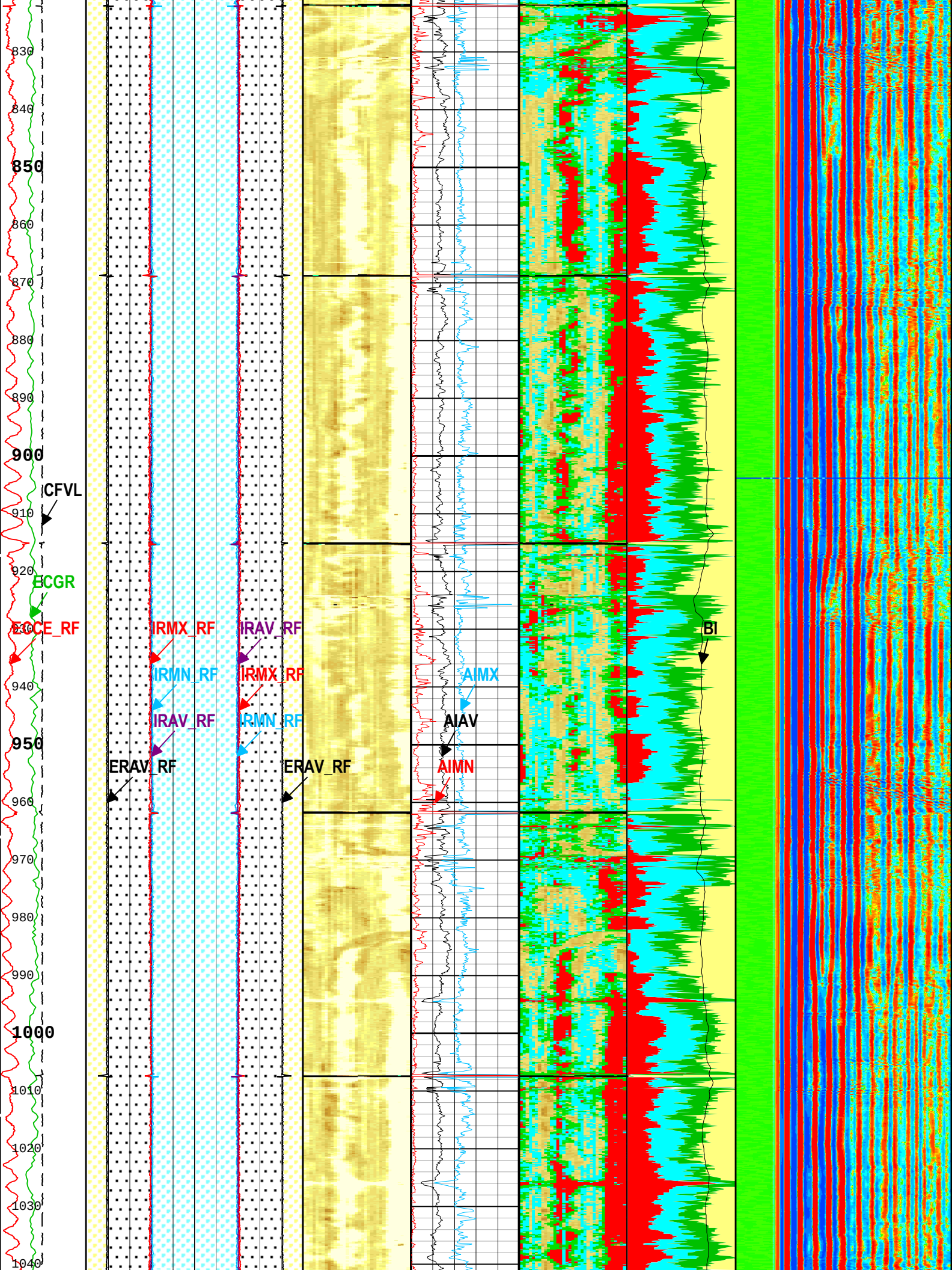
	ERAV_IRAV	ERAV_RHF1
	IRAV_LHF1	IRAV_ERAV
	LHF1_ERAV	RHF1_IRAV
	Median of Unflagged External Radii (ERAV_RF) USIT-E[1] 3.5 in 2.5	Median of Unflagged External Radii (ERAV_RF) USIT-E[1] 2.5 in 3.5
Amplitude of Eccentering	Median Internal Radius of Casing Corrected for Eccentering	Minimum of Unflagged Internal Radii (IRMN_RF)

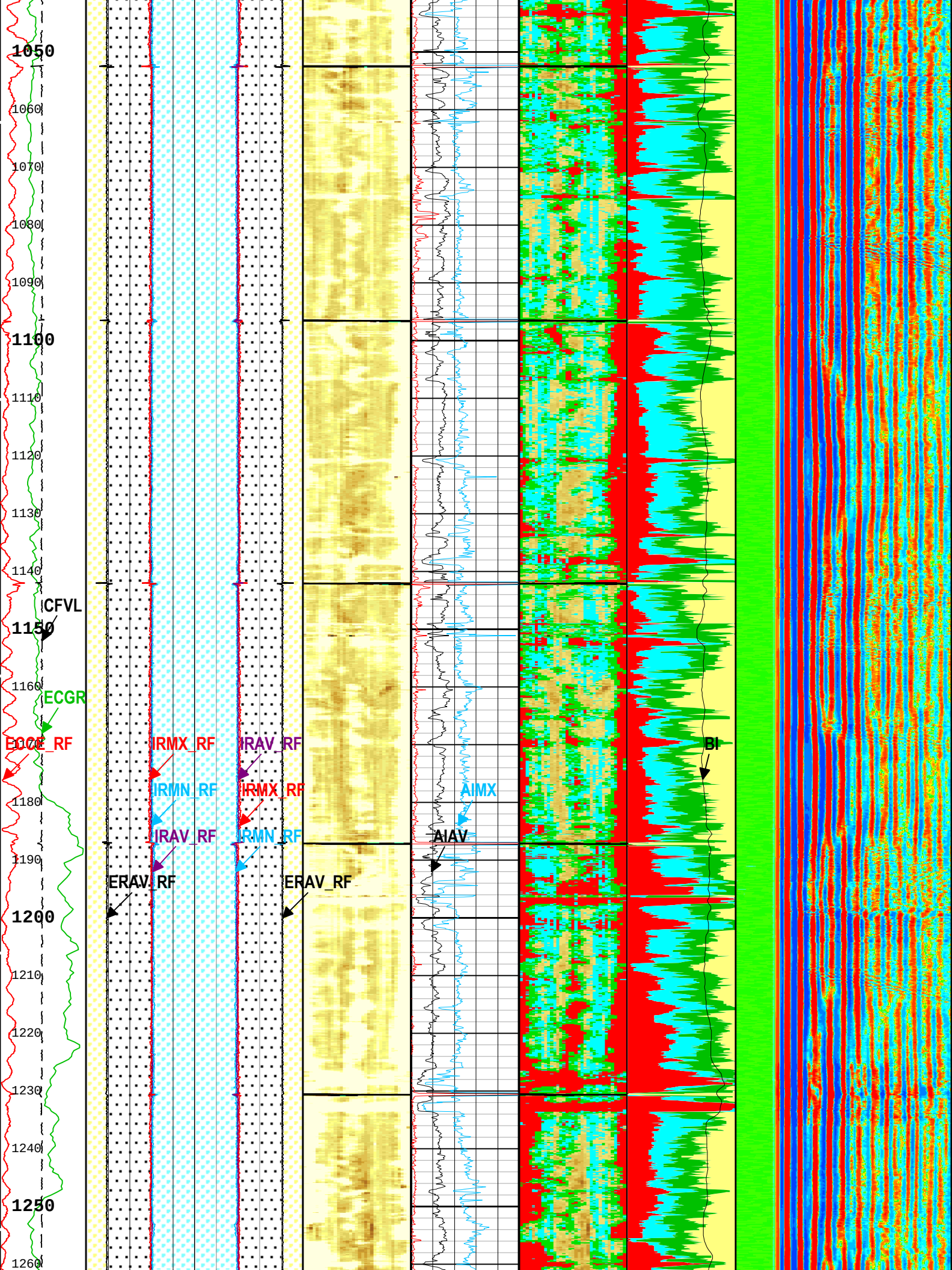

Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5
Gamma Ray (ECGR) HGNS[1]
0 gAPI 150
Memorized Fluid Acoustic Slowness (CFVL) USIT-E[1]
150 us/ft 250
(IRAV_RF) USIT-E[1]
3.5 in 2.5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.5 in 2.5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
3.5 in 2.5
USIT-E[1]
2.5 in 3.5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
2.5 in 3.5
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
2.5 in 3.5
Absent 1.000 2.500 4.000 5.500 7.000
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Acoustic Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9
Acoustic Impedance Average (AIAV) USIT-E[1]
-1 Mrayl 9
Acoustic Impedance Maximum (AIMX) USIT-E[1]
-1 Mrayl 9
Absent 0.300 3.581 5.054 6.527 8.000
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)
Bonded
Gas
Liquid
Micro-debonding
Bond Index (BI) DSLT-H[1]
1 0
Min Amplitude Max
Sonic VDL Curve DSLT-H[1]
200 us 1200
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160

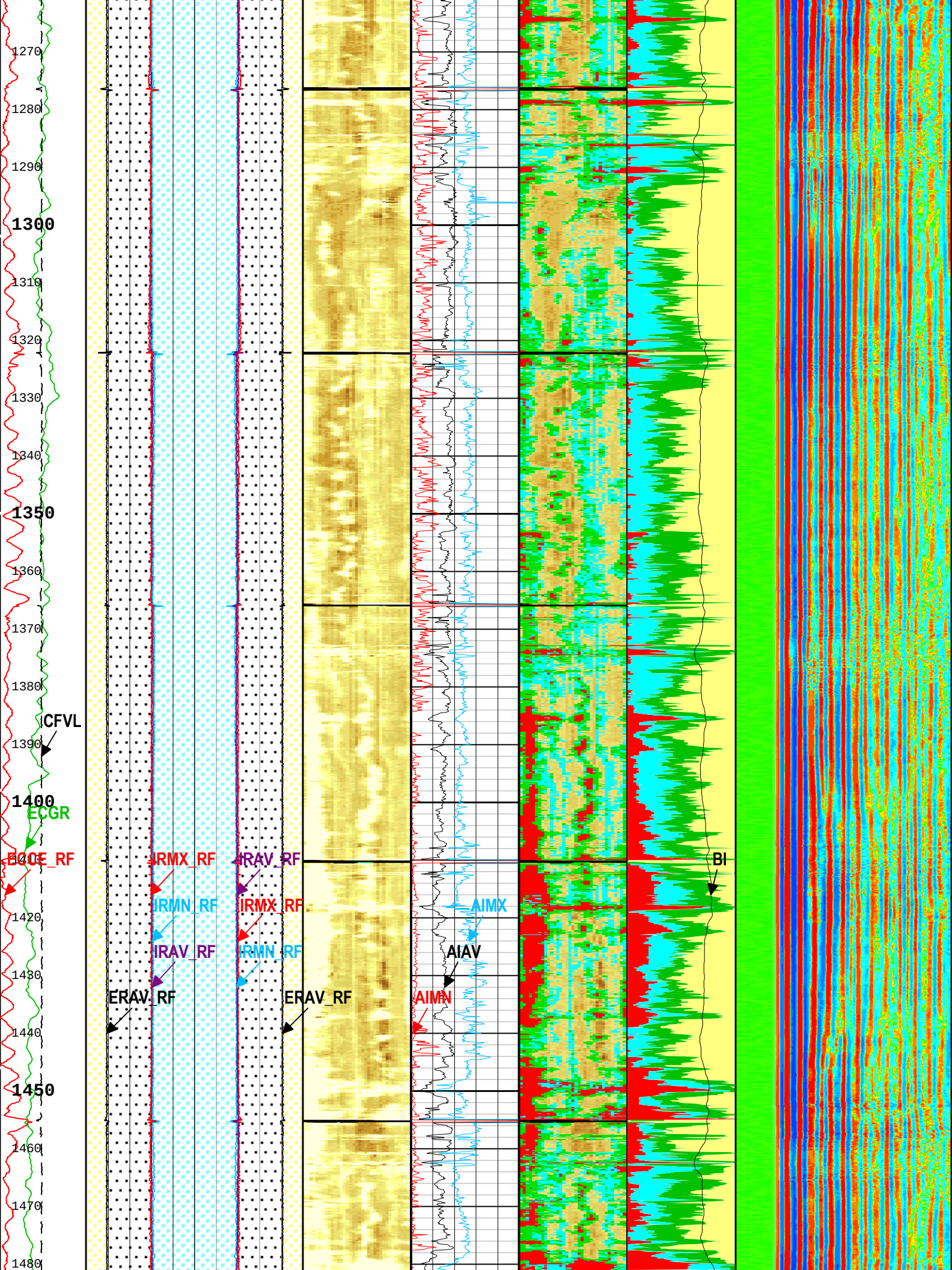

170
180
CFVL
190
200
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
AIMX
AIAV
AIMN
BI
220
230
ERAV_RF
ERAV_RF
240
250
260
270
280
290
300
310
320
330
340
350
360
370
380

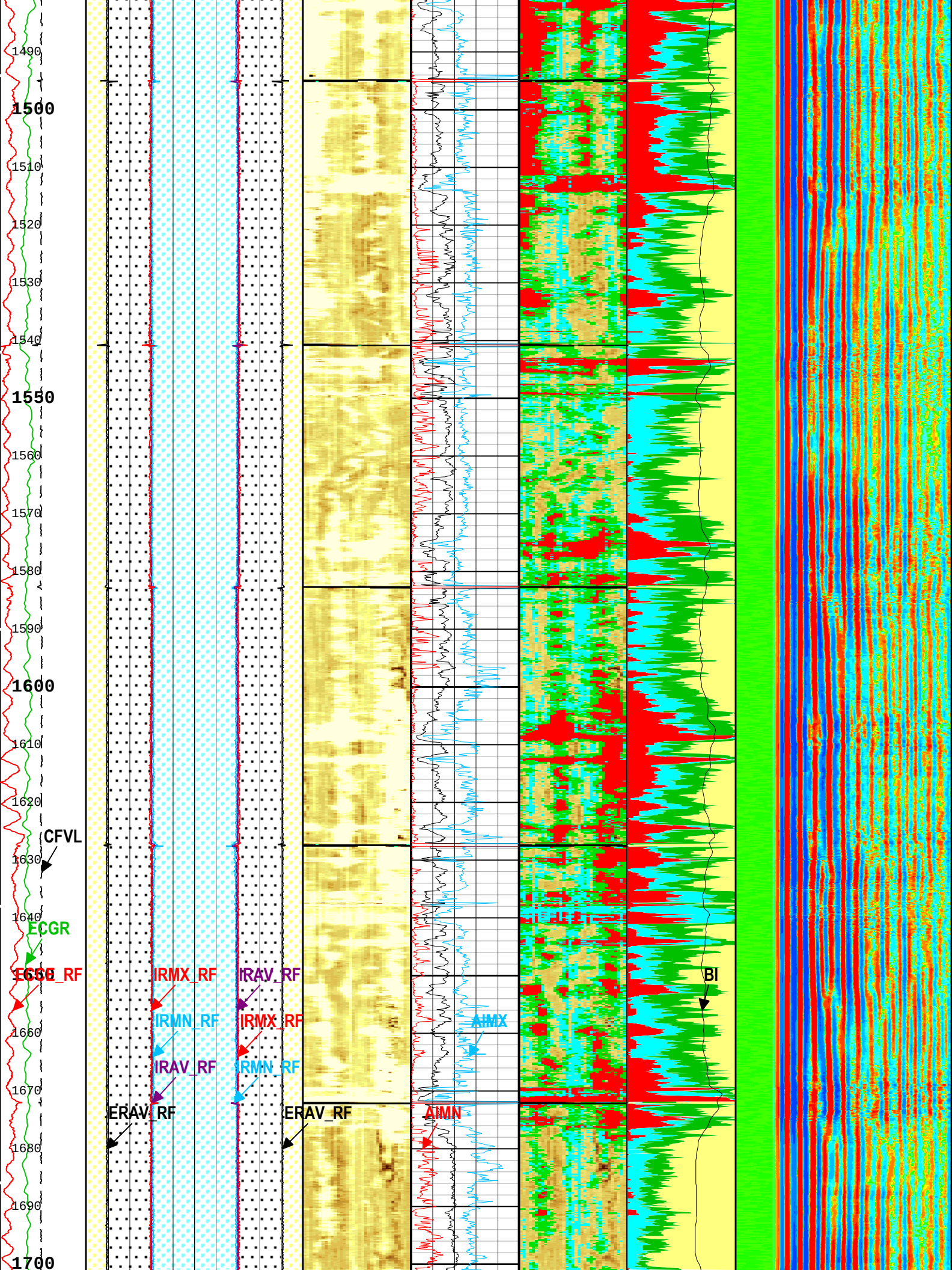

390
400
410
420
430
440
460
470
480
490
500
510
520
530
540
550
560
570
580
590
600
CFVL
ECGR
ECSC_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI

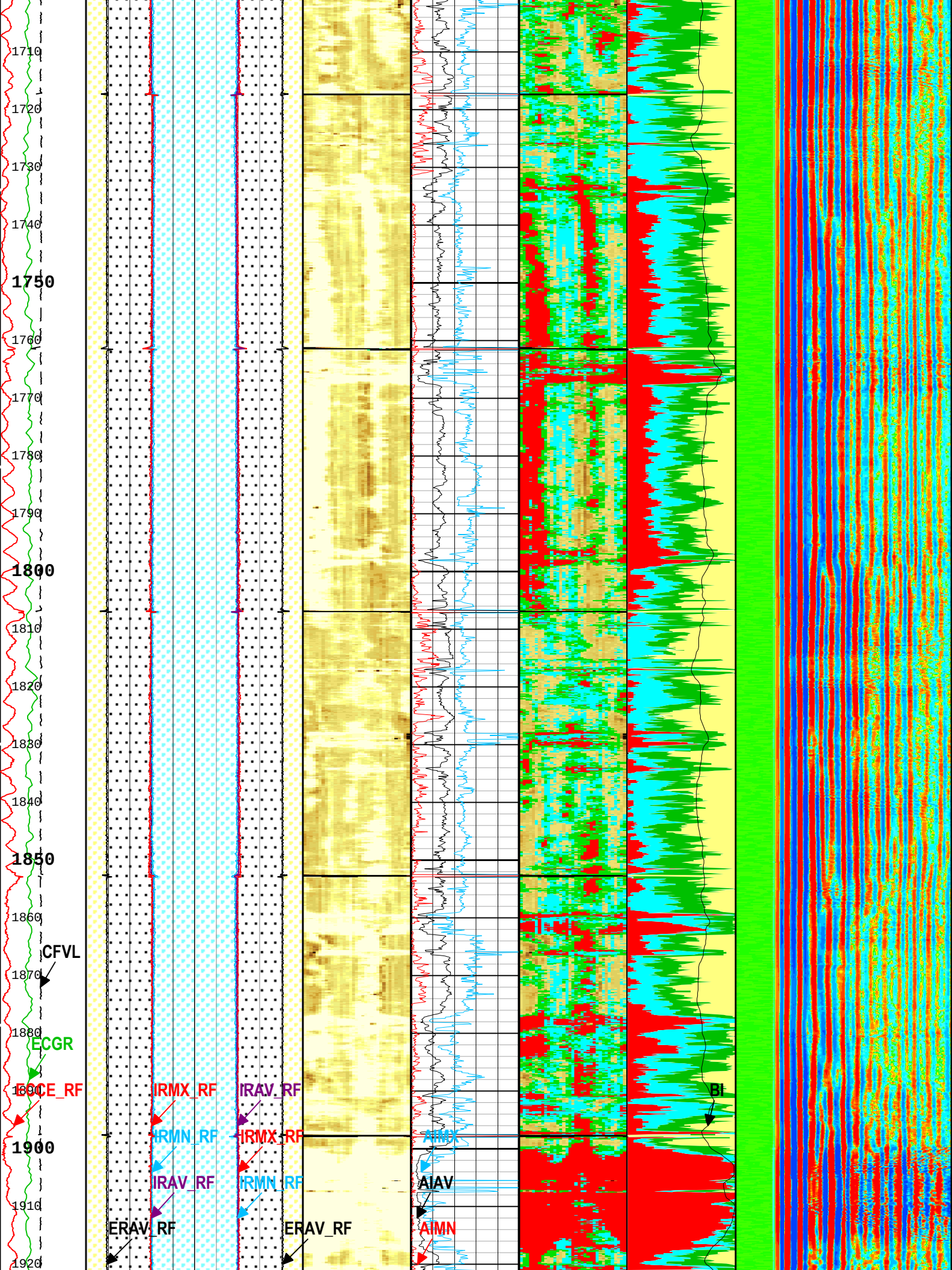

610
620
630
640
650
660
CFVL
670
680
ECGR
CCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
700
710
ERAV_RF
ERAV_RF
720
730
740
750
760
770
780
790
800
810
820
AIMX
AIAV
AIMN
BI

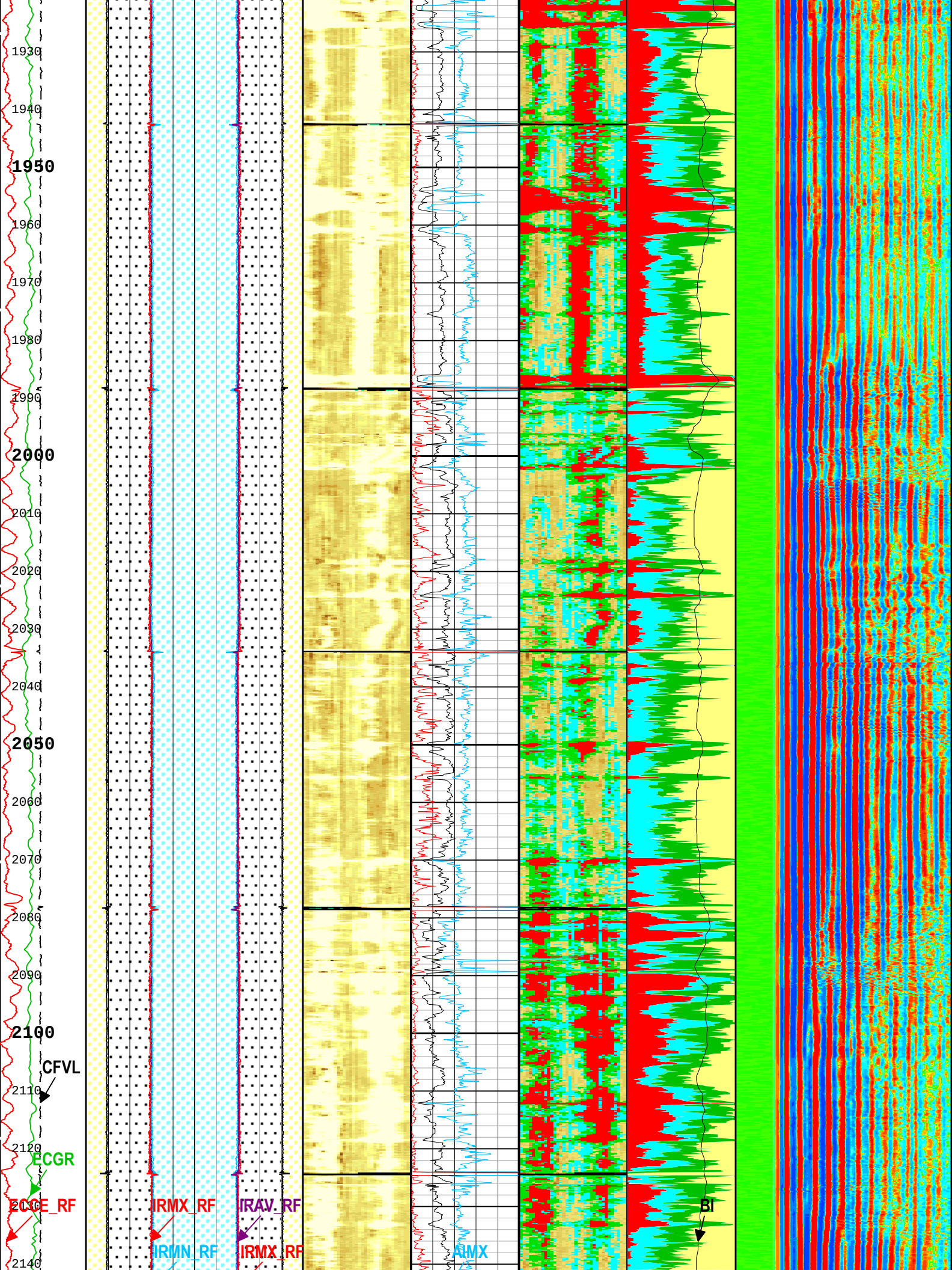

830
840
850
860
870
880
890
900
910
920
930
940
950
960
970
980
990
1000
1010
1020
1030
1040
CFVL
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI

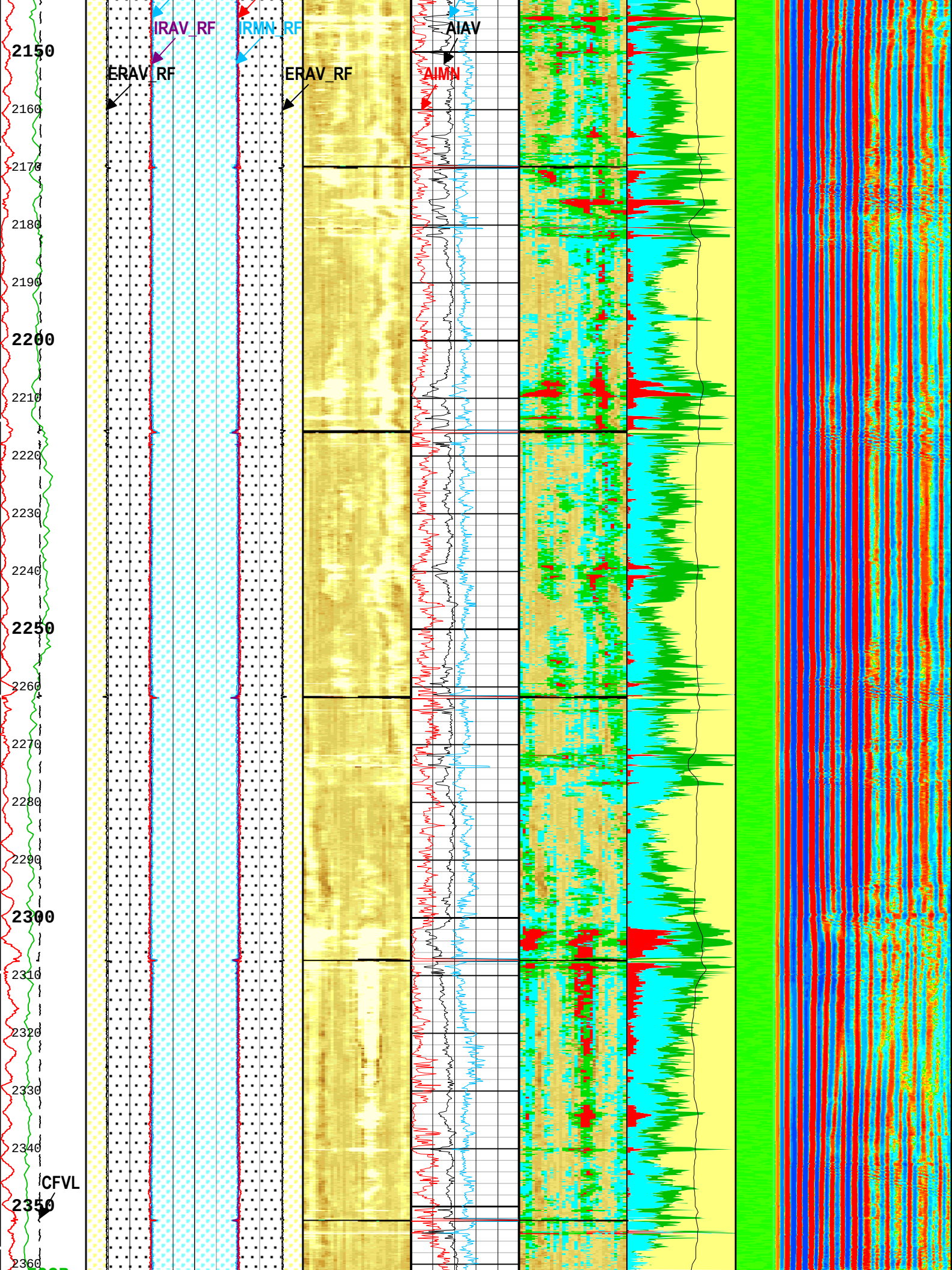

1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
CFVL
1150
1160
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
1180
1190
ERAV_RF
ERAV_RF
1200
1210
1220
1230
1240
1250
1260
AIMX
AIAV
BI

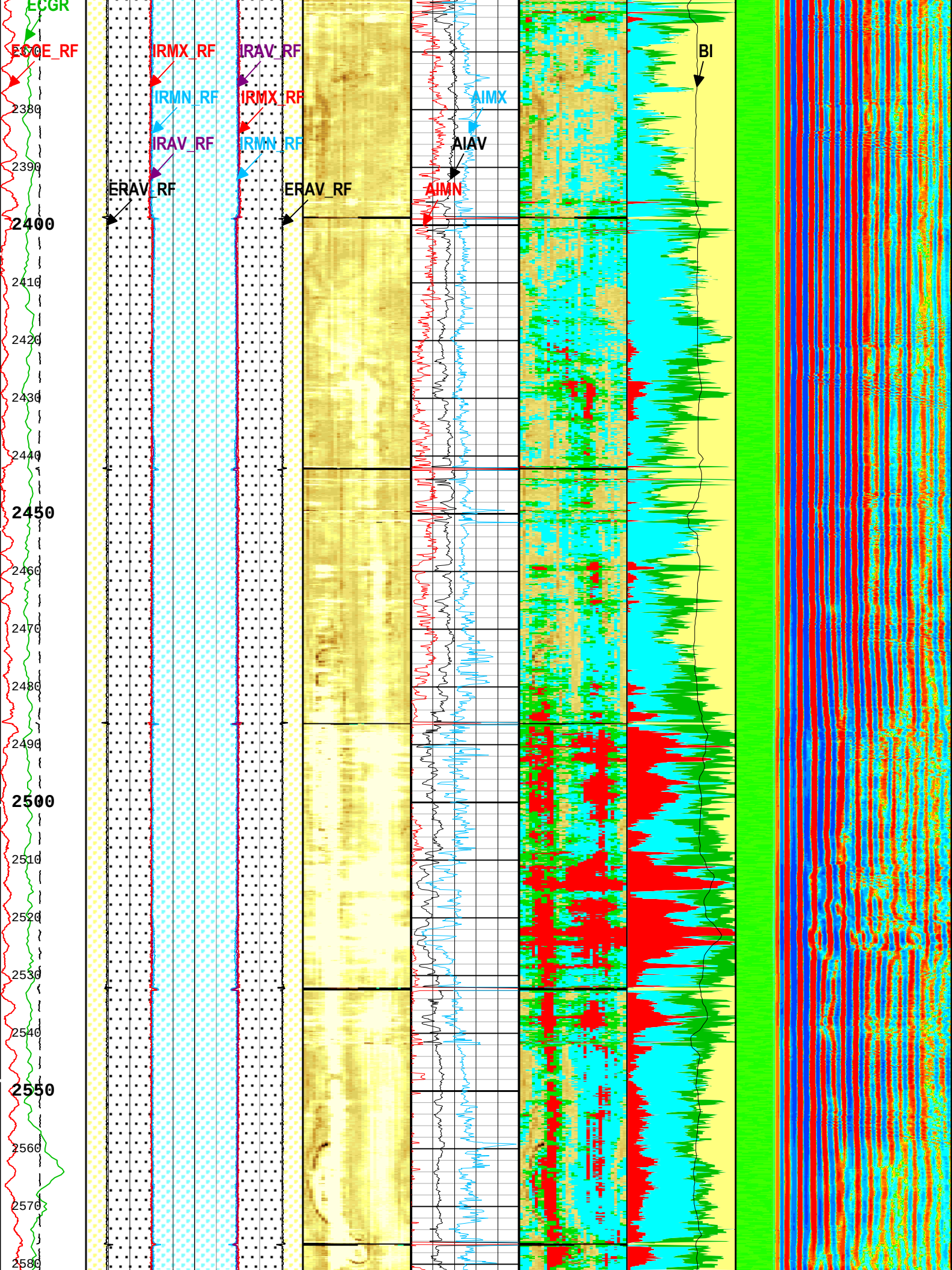

1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
CFVL
1390
1400
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
1420
1430
ERAV_RF
ERAV_RF
1440
1450
1460
1470
1480
AIMX
AIAV
AIMN
BI

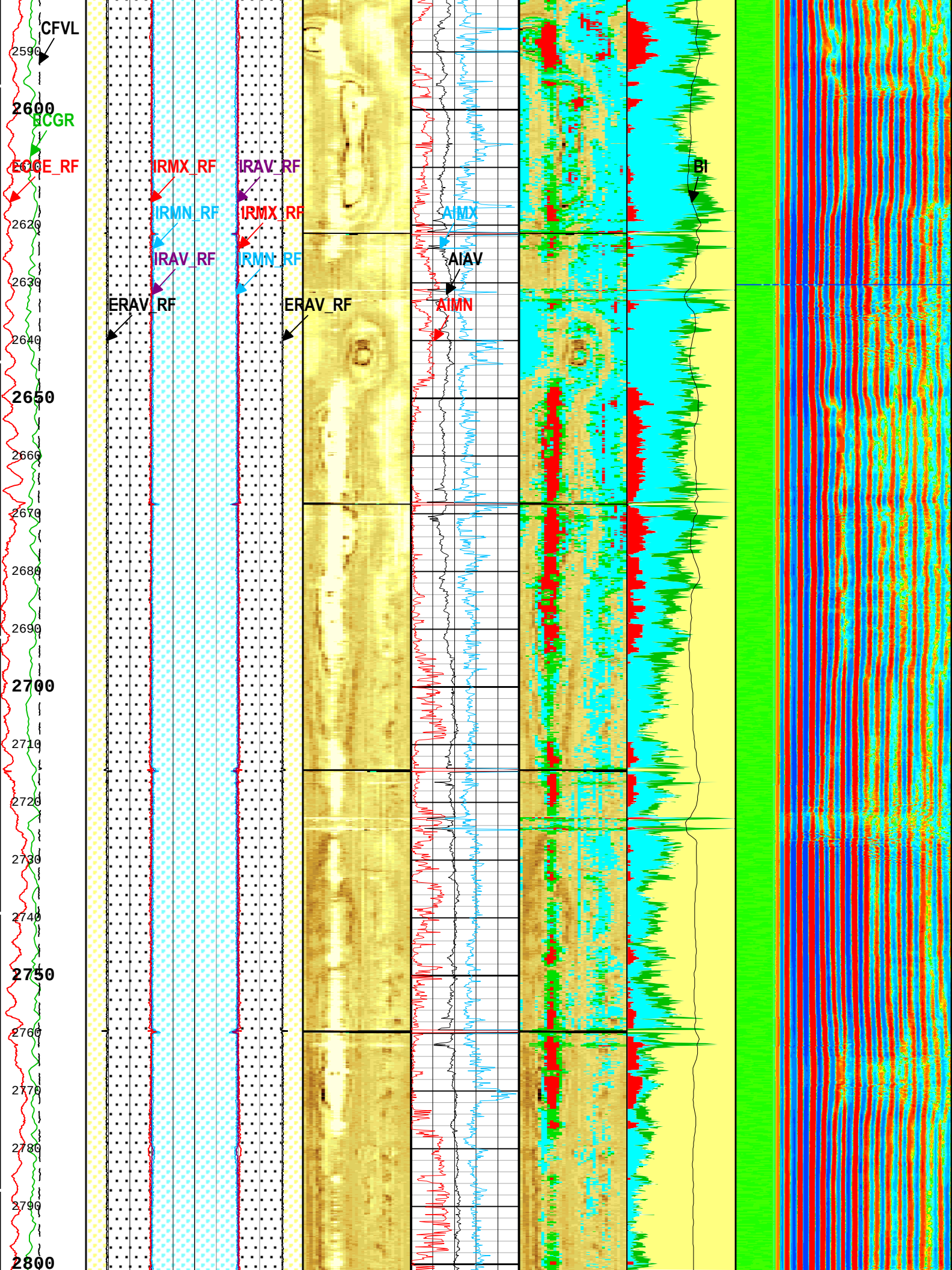

1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
CFVL
1630
1640
ECGR
1650
IRMX_RF
IRAV_RF
BI
IRMN_RF
IRMX_RF
AIMX
1660
IRAV_RF
IRMN_RF
1670
ERAV_RF
ERAV_RF
AIMN
1680
1690
1700

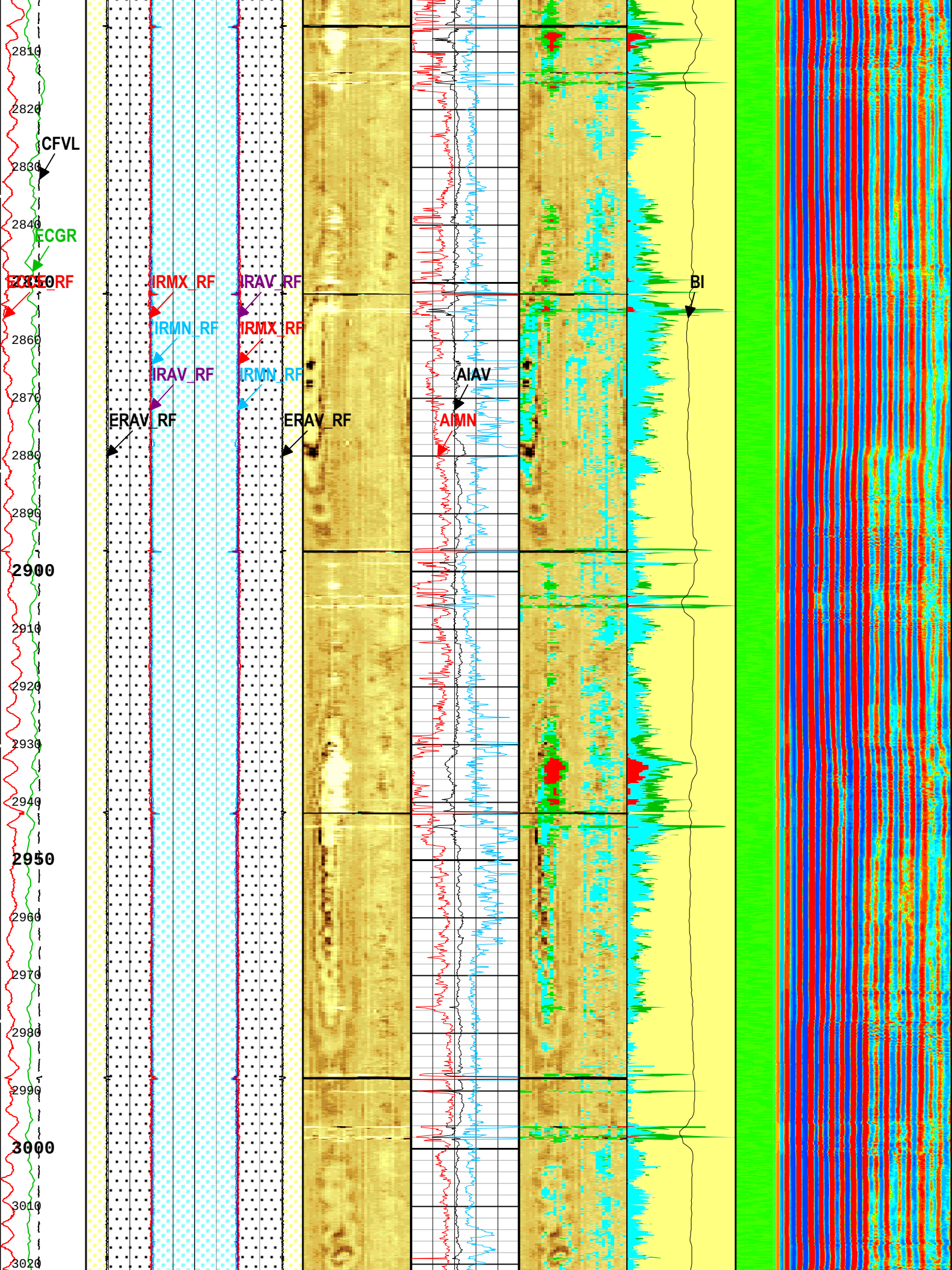

1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
1850
1860
CFVL
1870
1880
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
BI
1900
IRMN_RF
IRMX_RF
AIMX
IRAV_RF
IRMN_RF
AIAV
1910
ERAV_RF
ERAV_RF
AIMN
1920

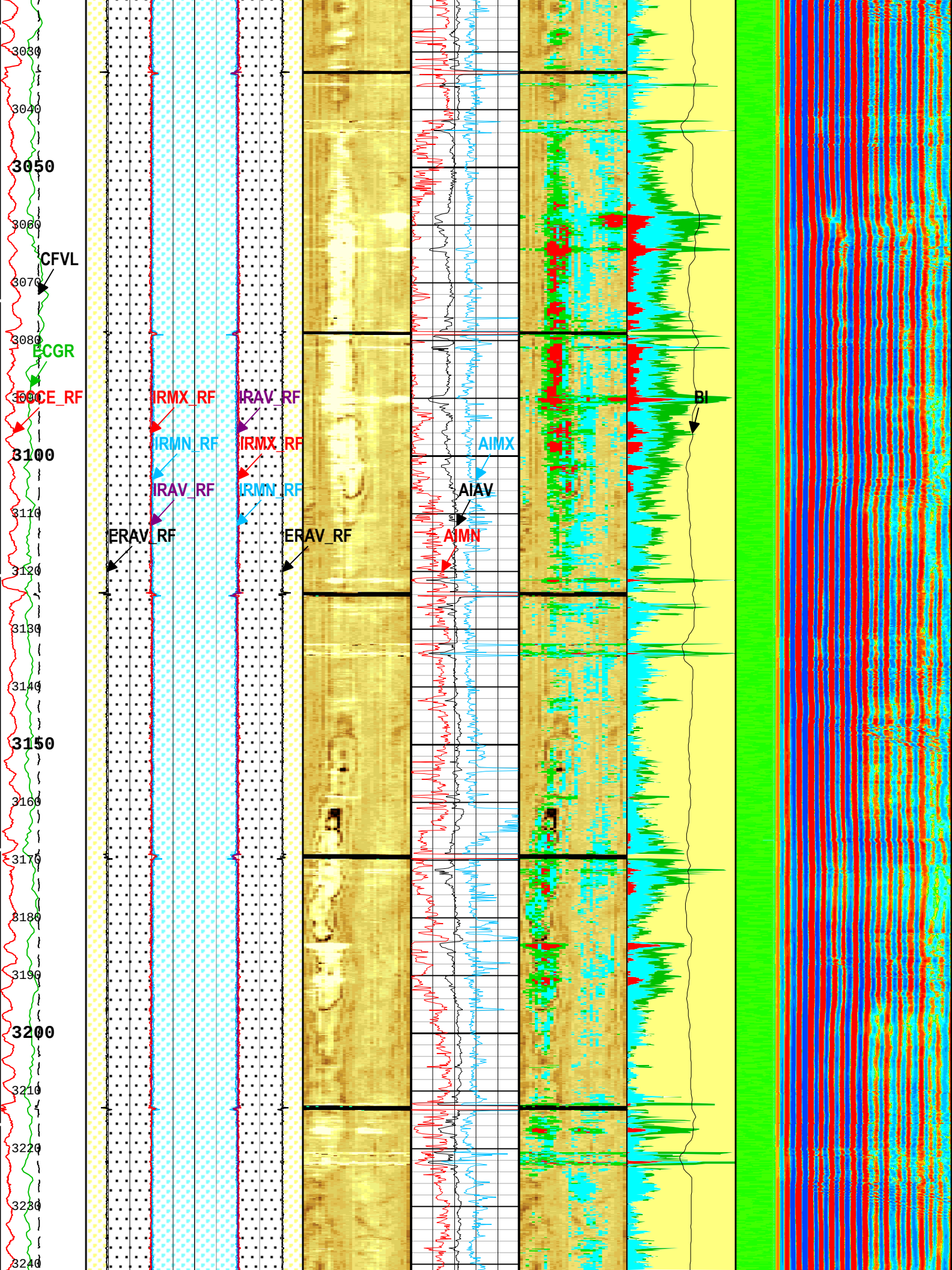

1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
CFVL
2110
2120
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
AIMX
BI
2140

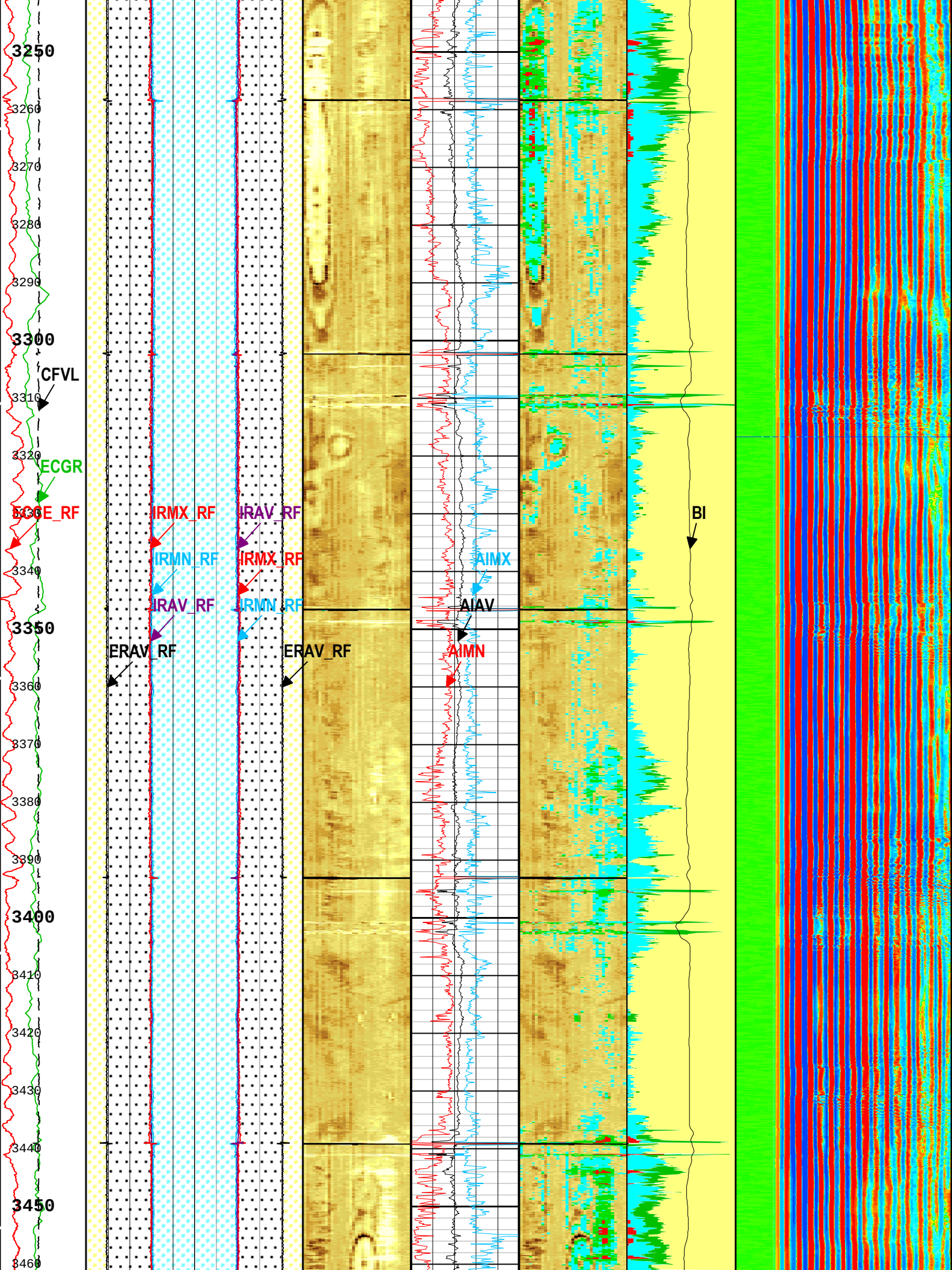

IRAV_RF
IRMN_RF
AIAV
ERAV_RF
ERAV_RF
AIMN
CFVL
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360

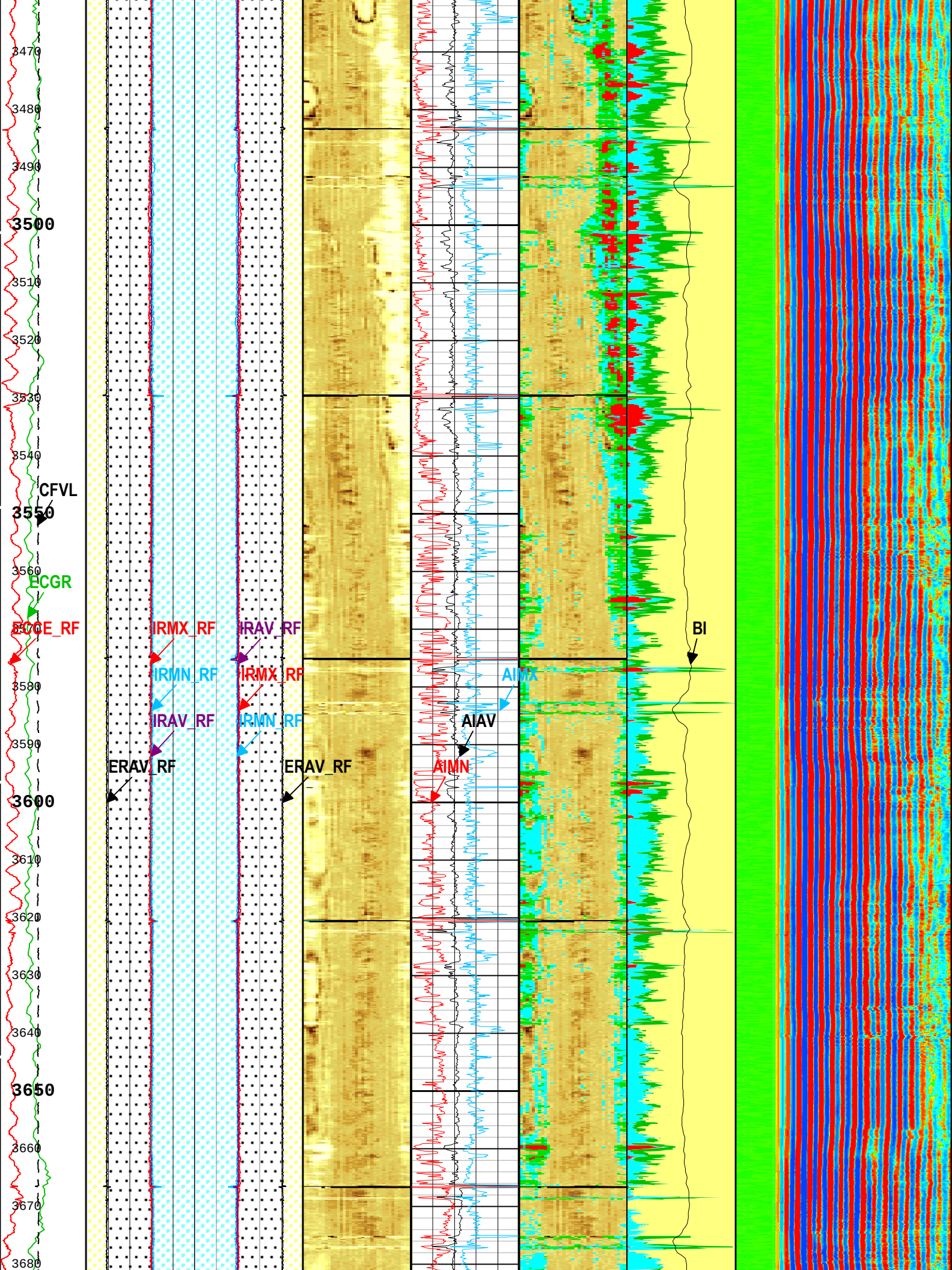

ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580

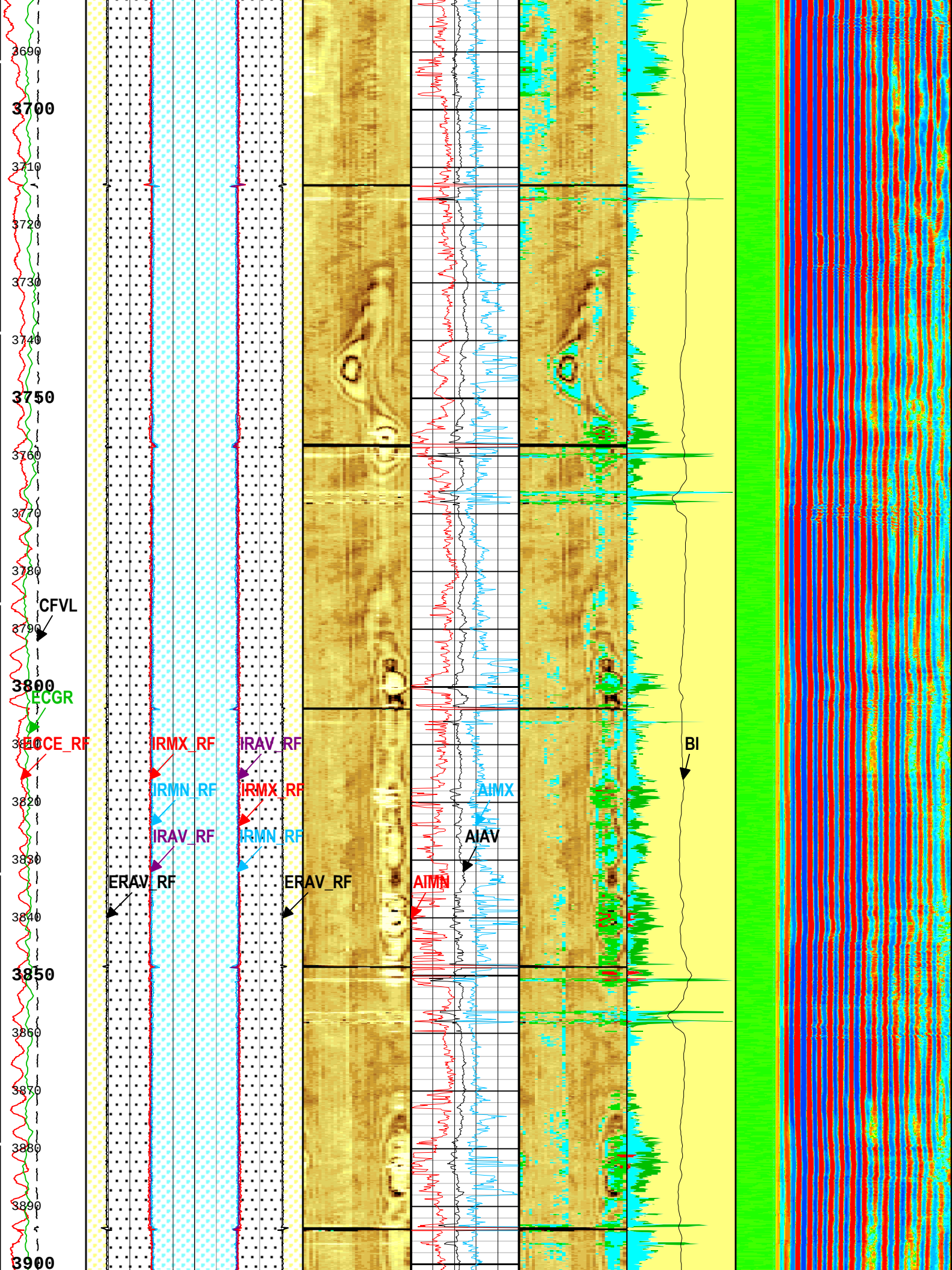

CFVL
2590
2600
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
AIMX
AIAV
AIMN
BI
ERAV_RF
ERAV_RF
2620
2630
2640
2650
2660
2670
2680
2690
2700
2710
2720
2730
2740
2750
2760
2770
2780
2790
2800

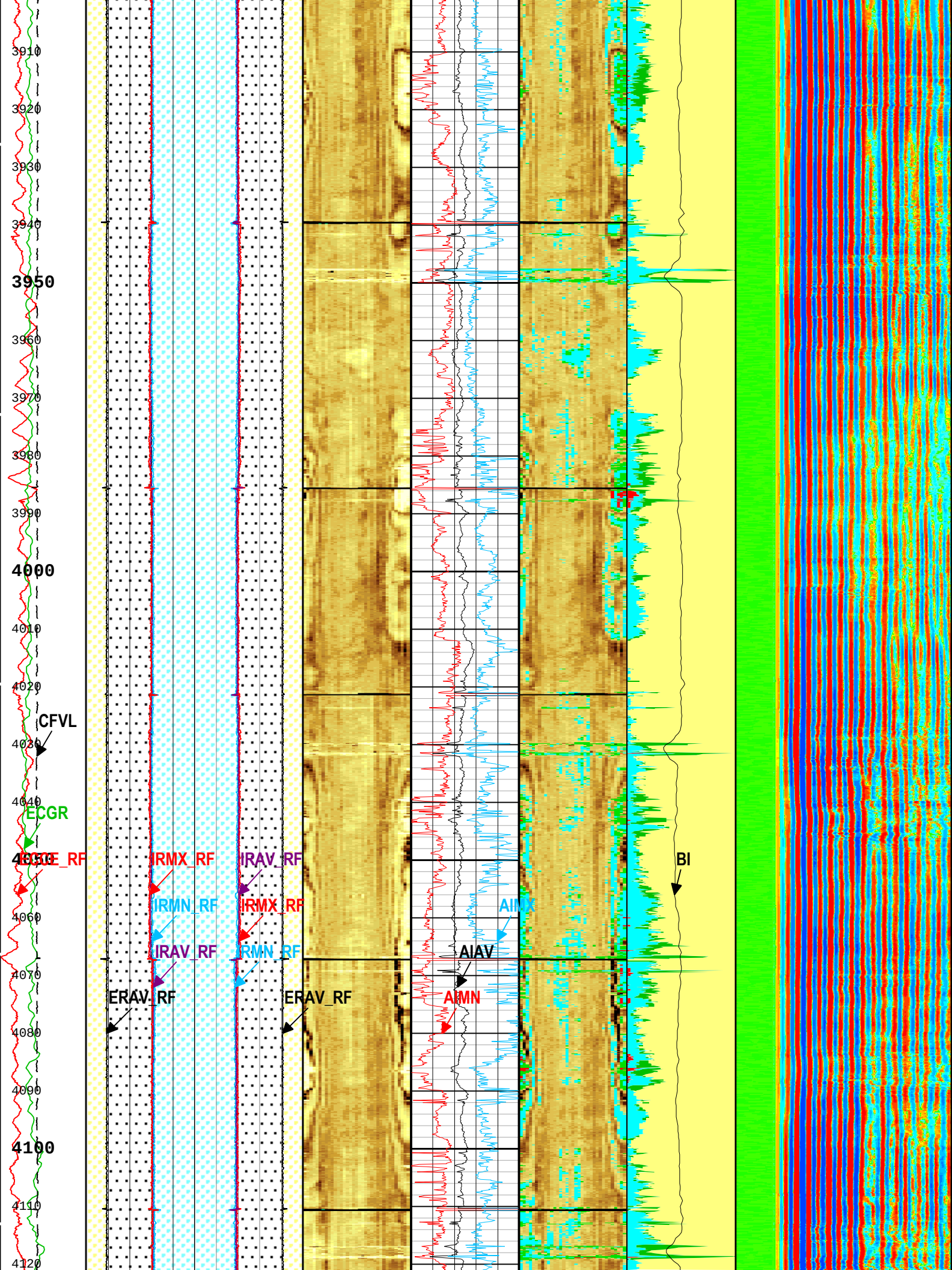

2810
2820
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
3020
CFVL
ECGR
ERAV_RF
IRMX_RF
IRMN_RF
IRAV_RF
IRAV_RF
IRMX_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIAV
AIMN
BI

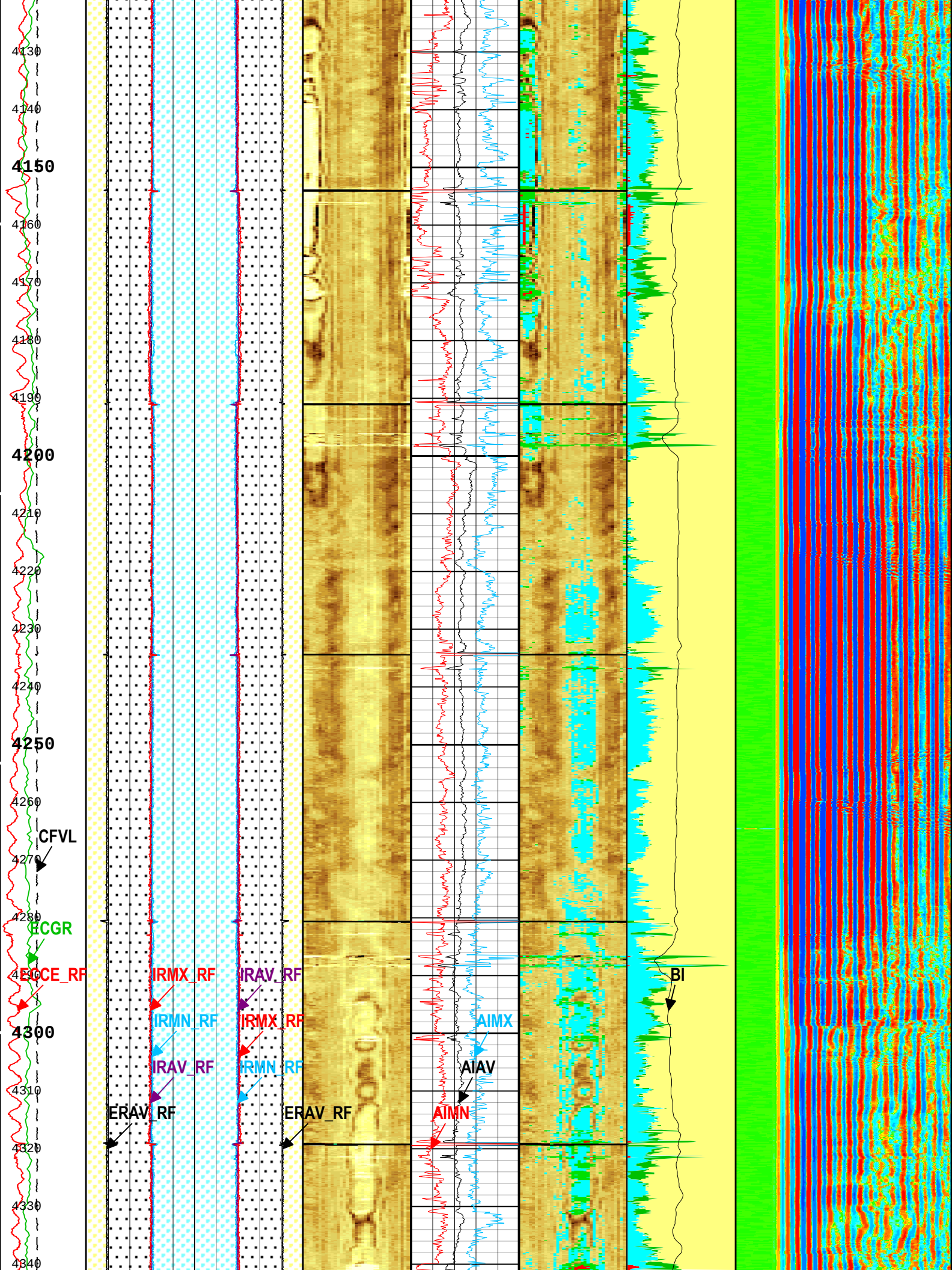

3030
3040
3050
3060
CFVL
3070
3080
ECGR
3090
ECCE_RF
IRMX_RF
IRAV_RF
BI
IRMN_RF
IRMX_RF
AIMX
3100
IRAV_RF
IRMN_RF
AIAV
3110
ERAV_RF
ERAV_RF
AIMN
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240

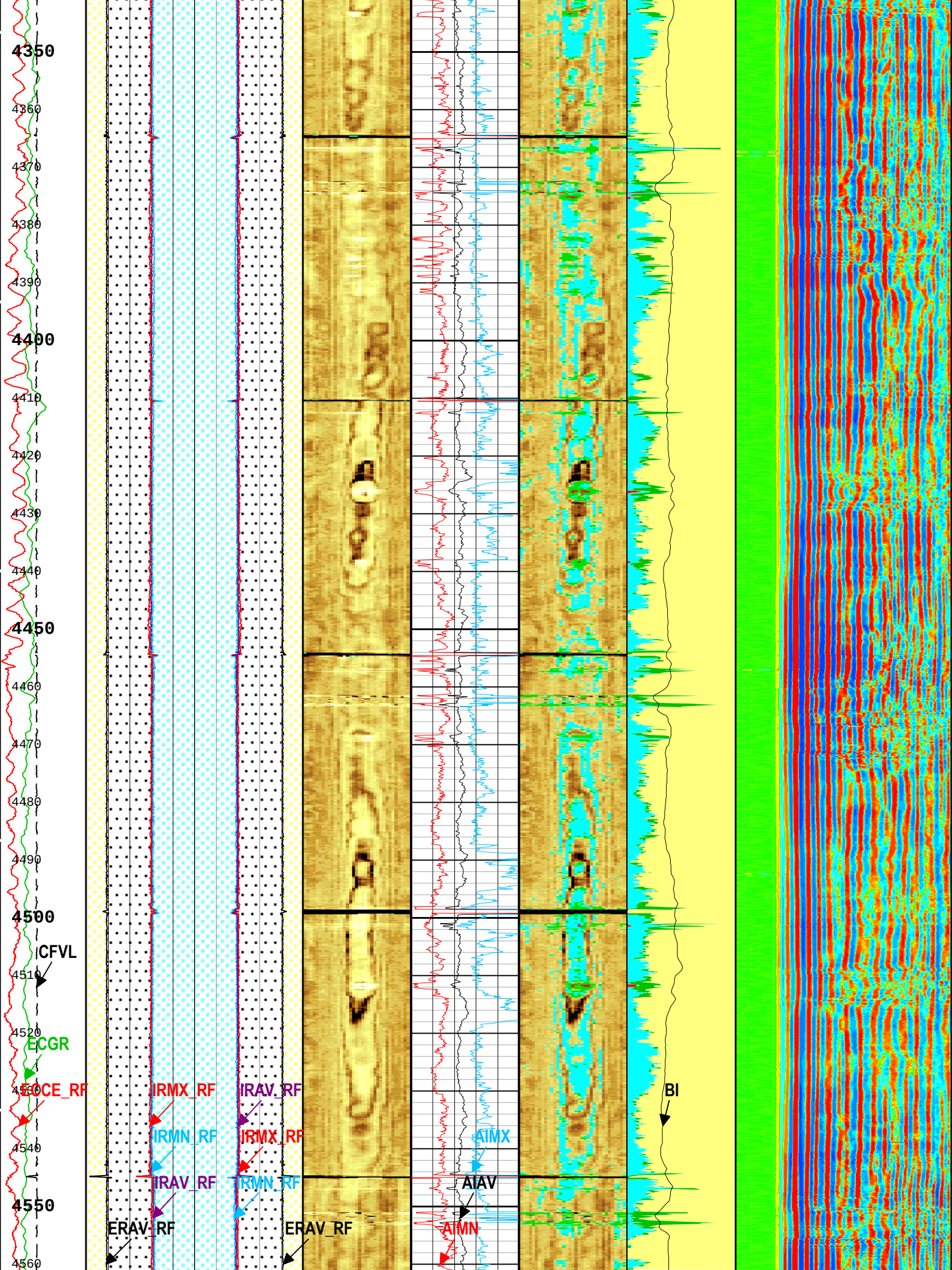

3250
3260
3270
3280
3290
3300
CFVL
3310
3320
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
3340
3350
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460

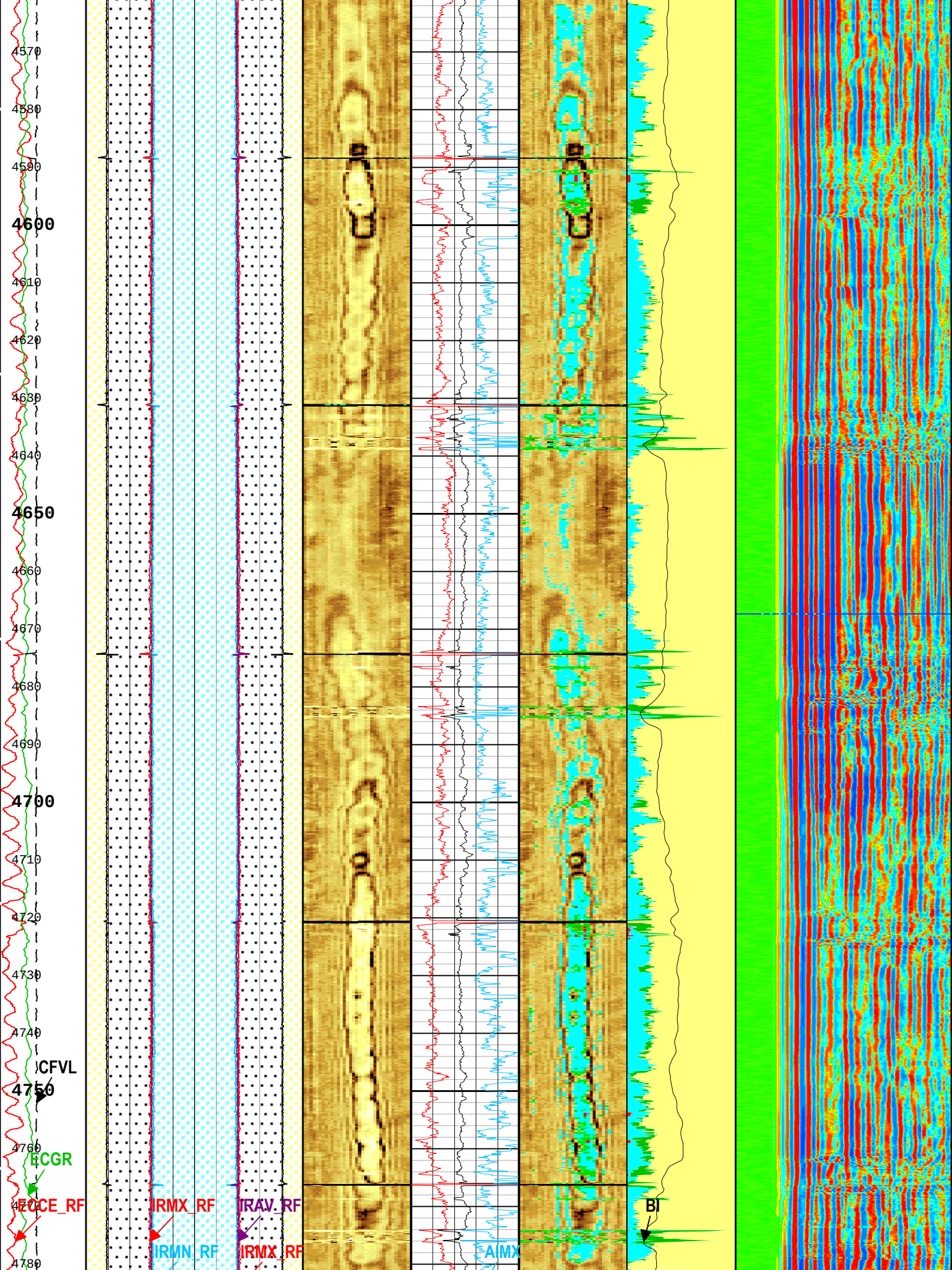

3470
3480
3490
3500
3510
3520
3530
3540
CFVL
3550
3560
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI
3580
3590
3600
3610
3620
3630
3640
3650
3660
3670
3680

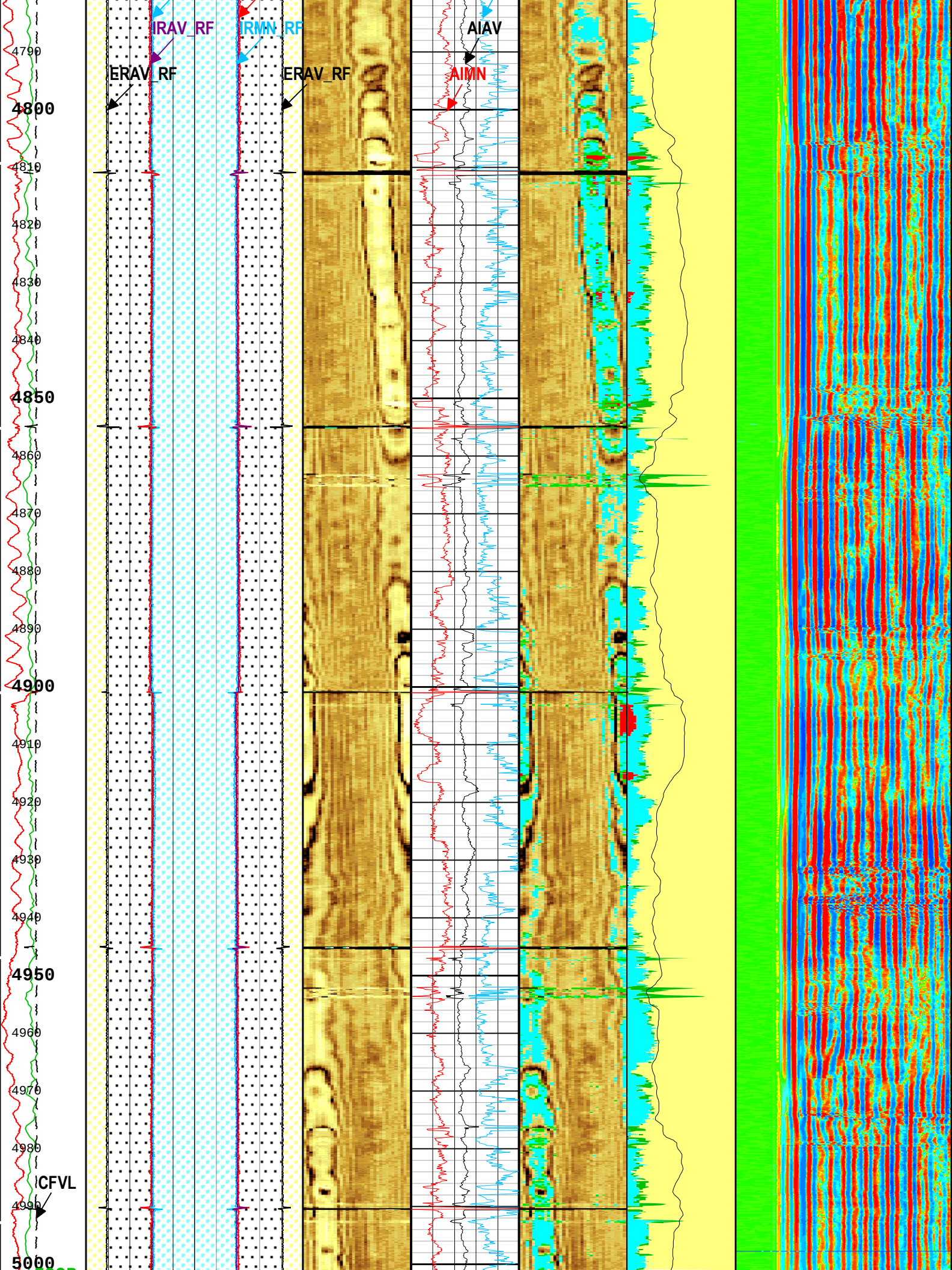

3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
CFVL
3790
3800
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
AIMX
AIAV
AIMN
BI
3820
3830
ERAV_RF
ERAV_RF
3840
3850
3860
3870
3880
3890
3900

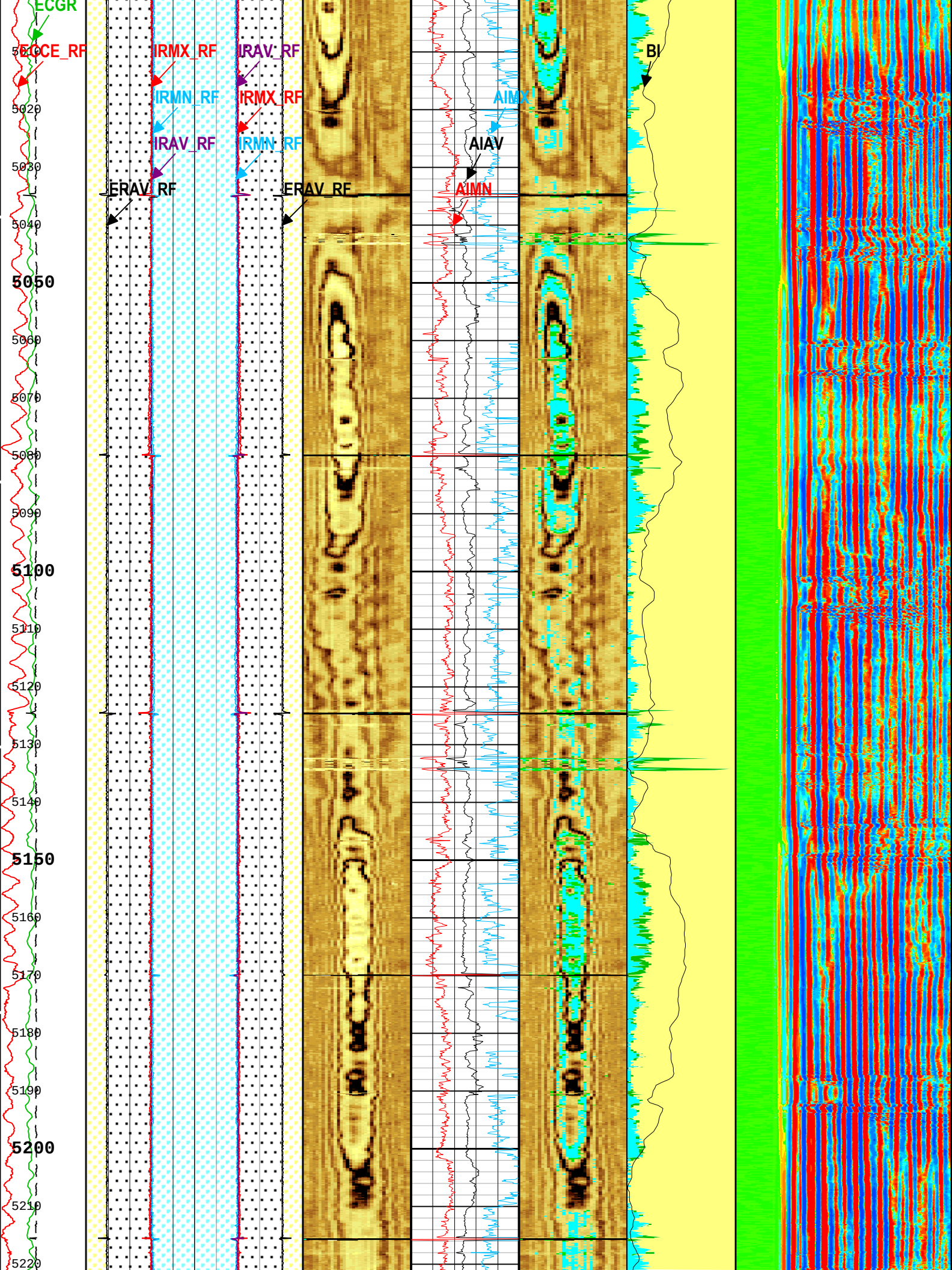

3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
4040
4050
4060
4070
4080
4090
4100
4110
4120
CFVL
ECGR
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI

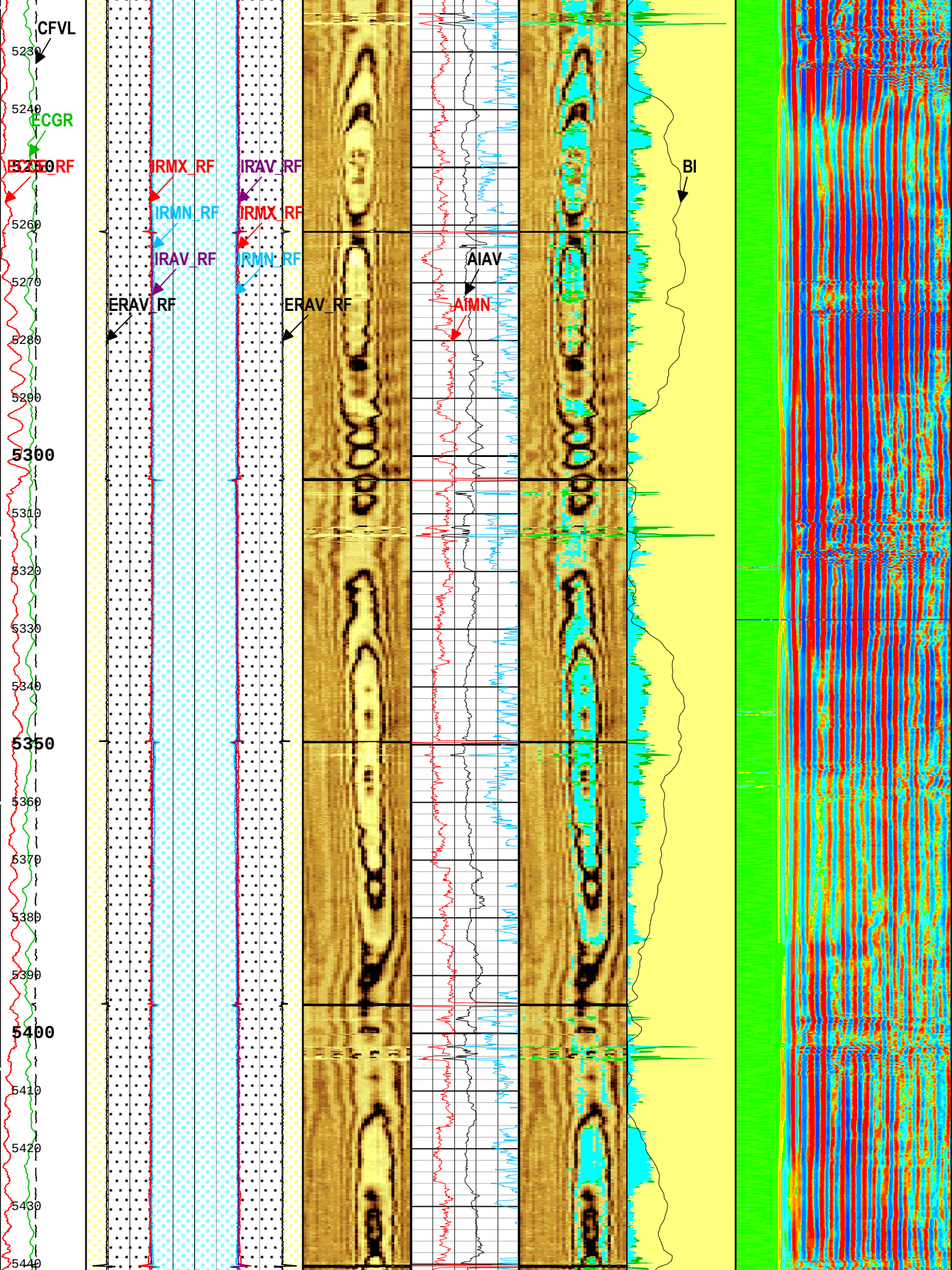

4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
CFVL
4270
4280
ECGR
4290
CE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
4300
4310
ERAV_RF
ERAV_RF
4320
4330
4340
AIMX
AIAV
AIMN
BI

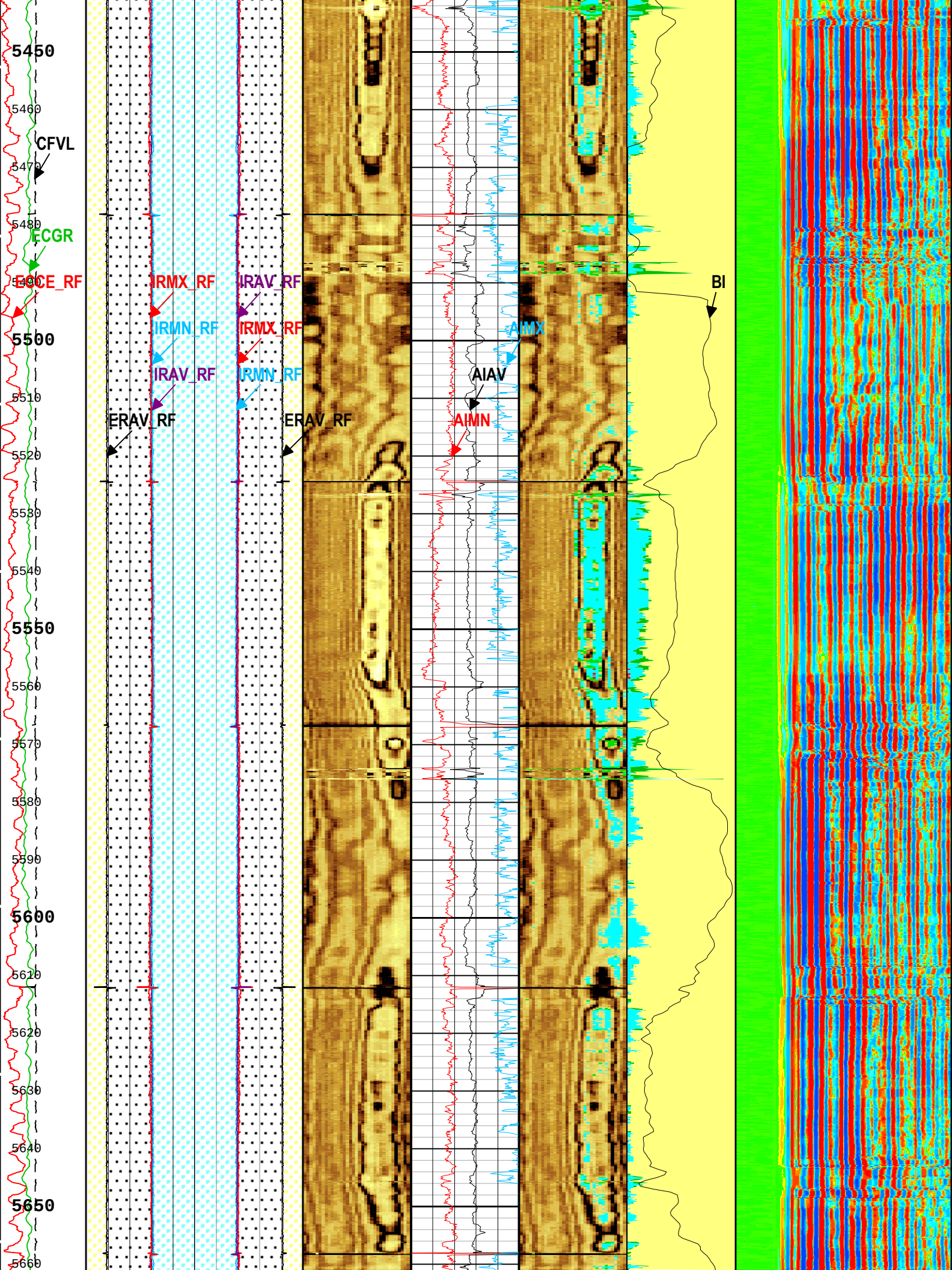

4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
4510
4520
4530
4540
4550
4560
CFVL
ECGR
ECE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI

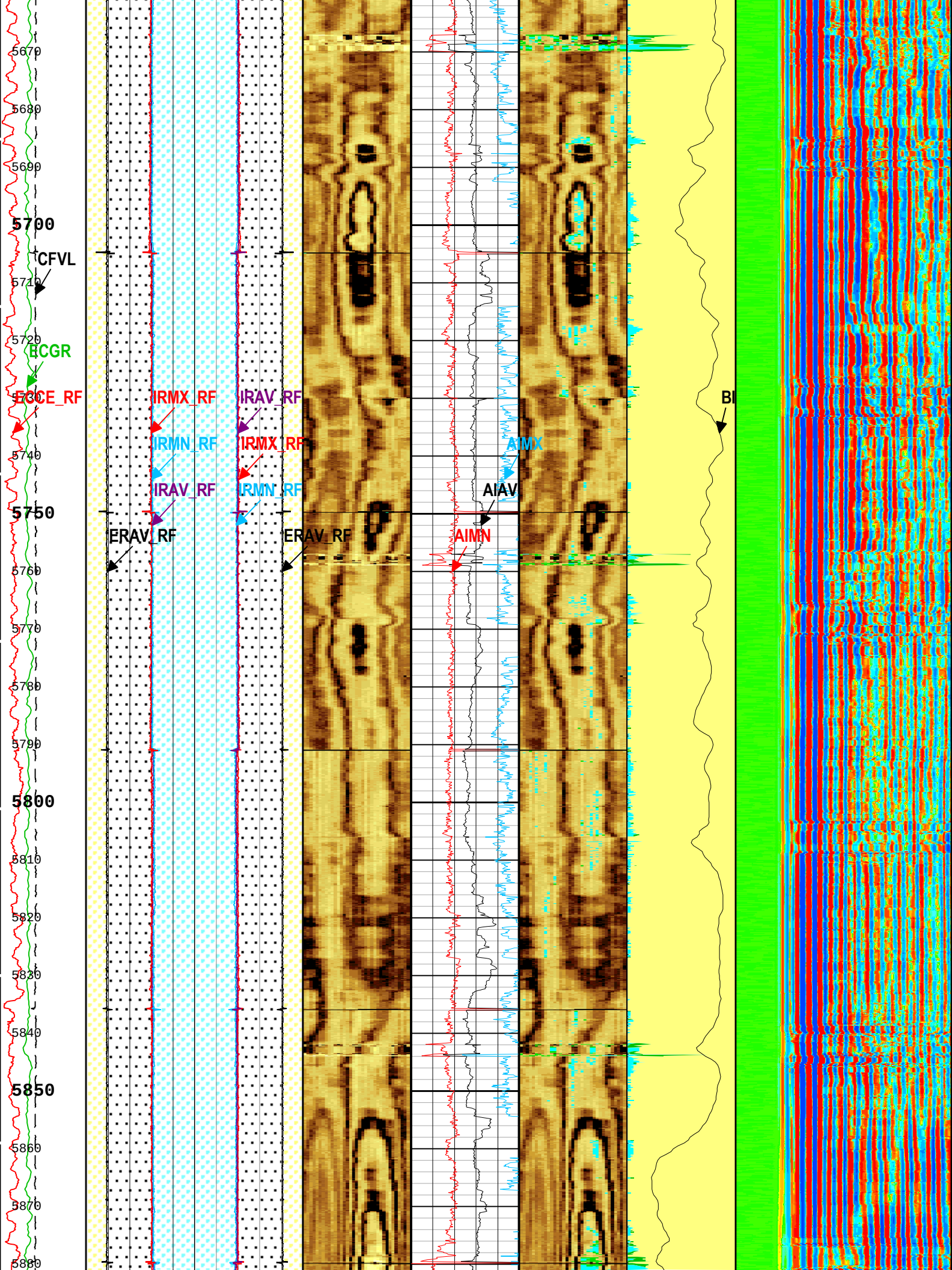

4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
4720
4730
4740
CFVL
4750
4760
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
AIMX
BI
4780

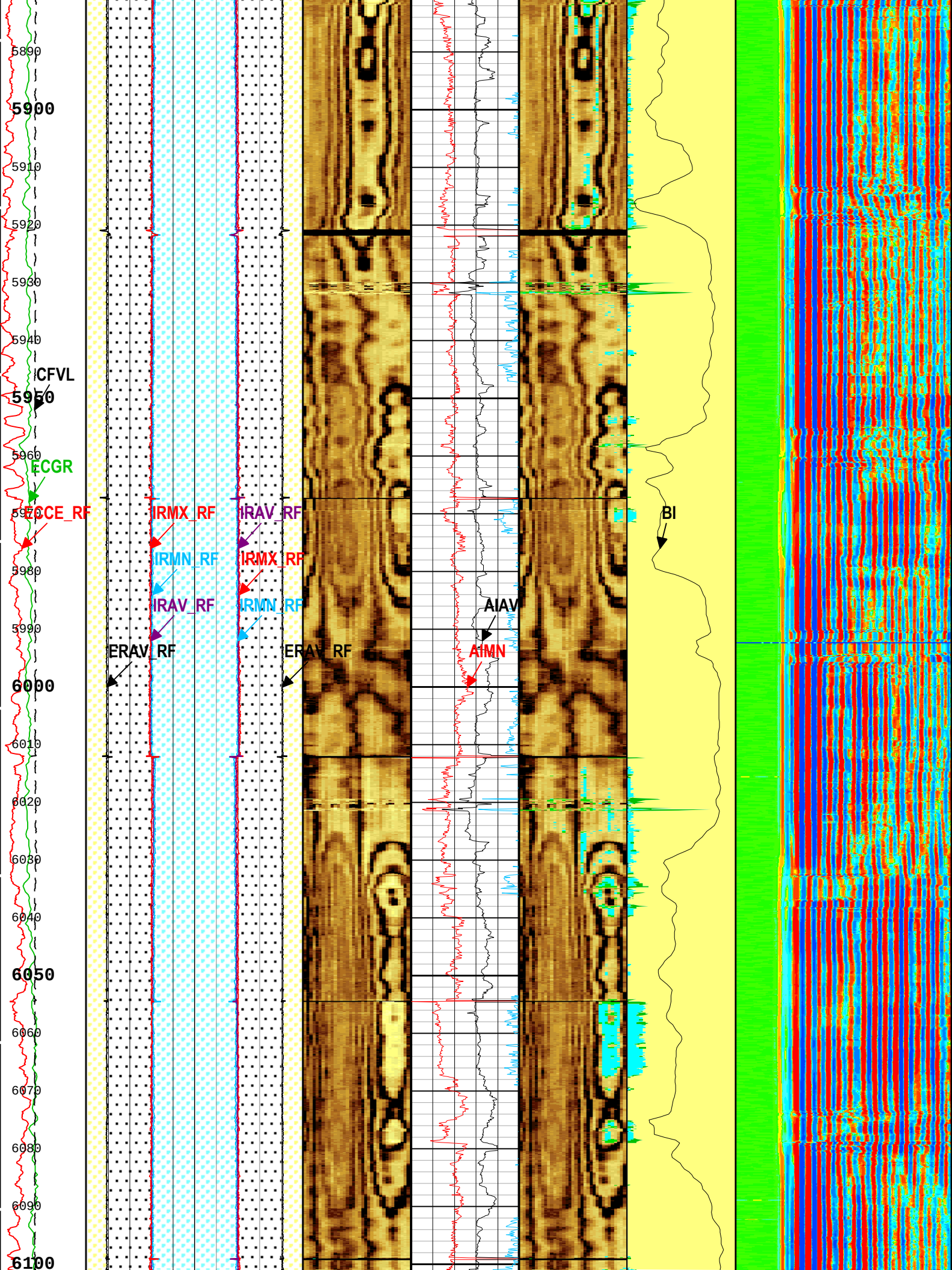

IRAV_RF
IRMN_RF
AIAV
ERAV_RF
ERAV_RF
AIMN
CFVL
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930
4940
4950
4960
4970
4980
4990
5000

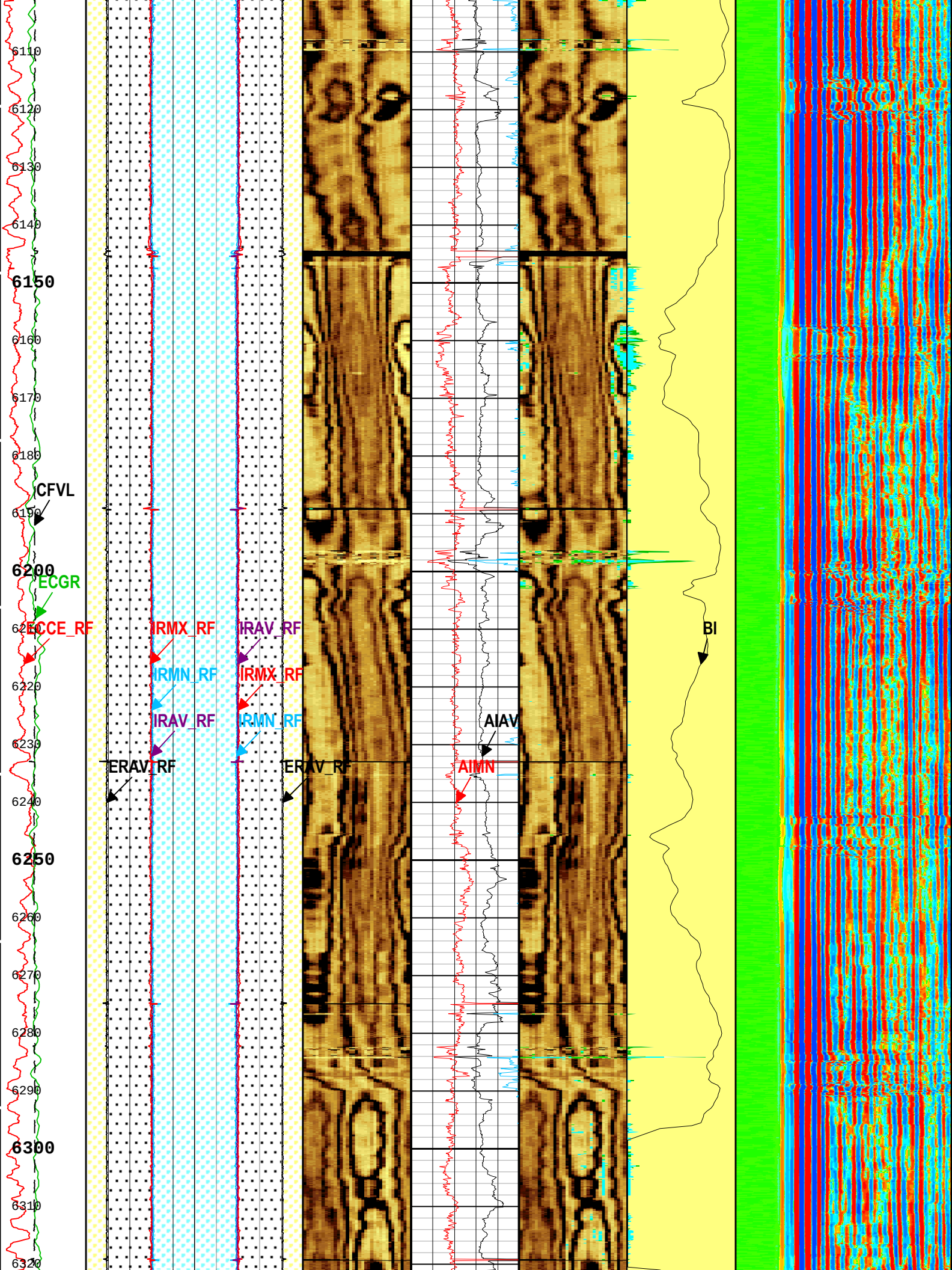

ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150
5160
5170
5180
5190
5200
5210
5220

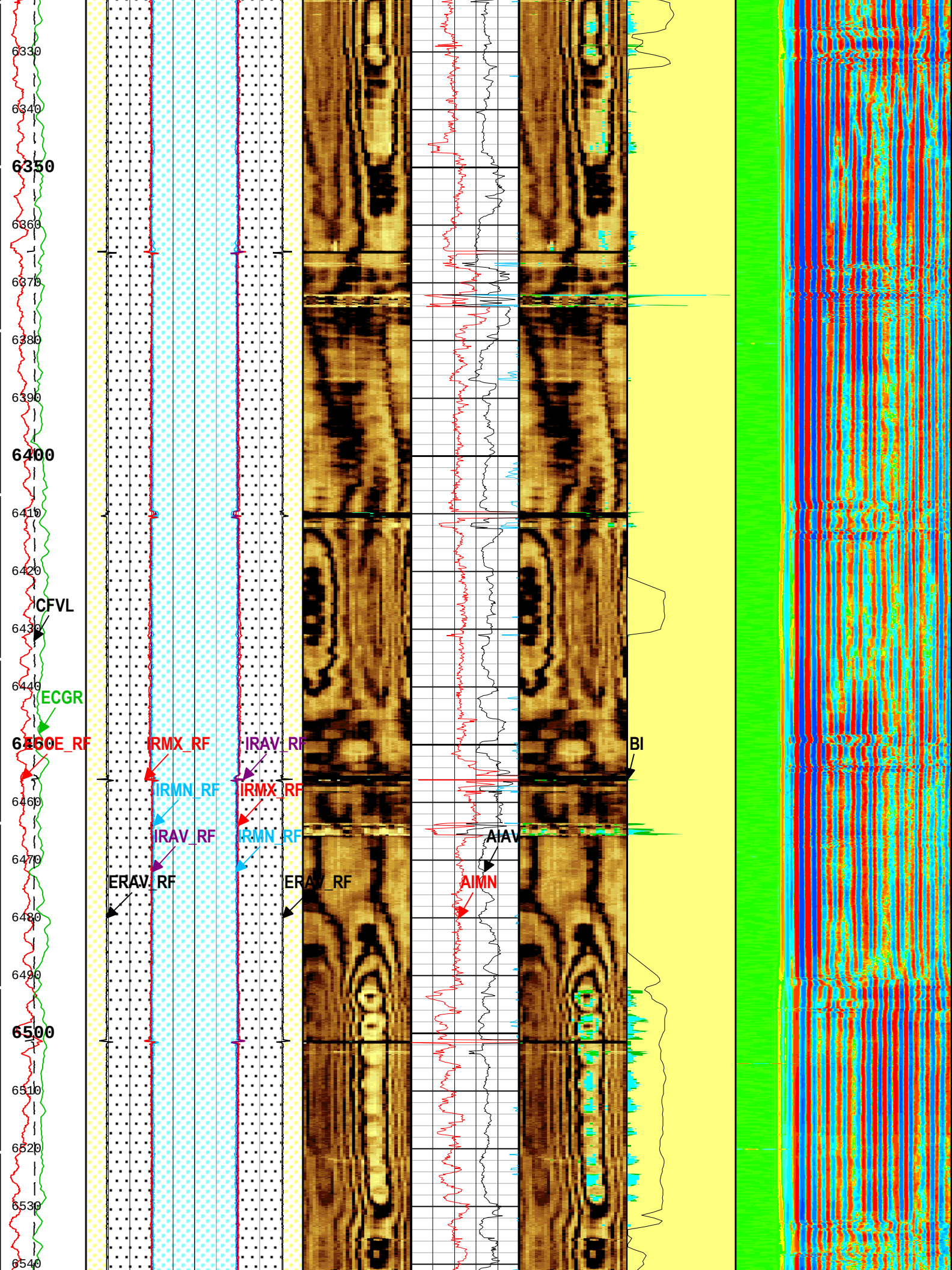

CFVL
ECGR
ECGR_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIAV
AIMN
BI
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370
5380
5390
5400
5410
5420
5430
5440

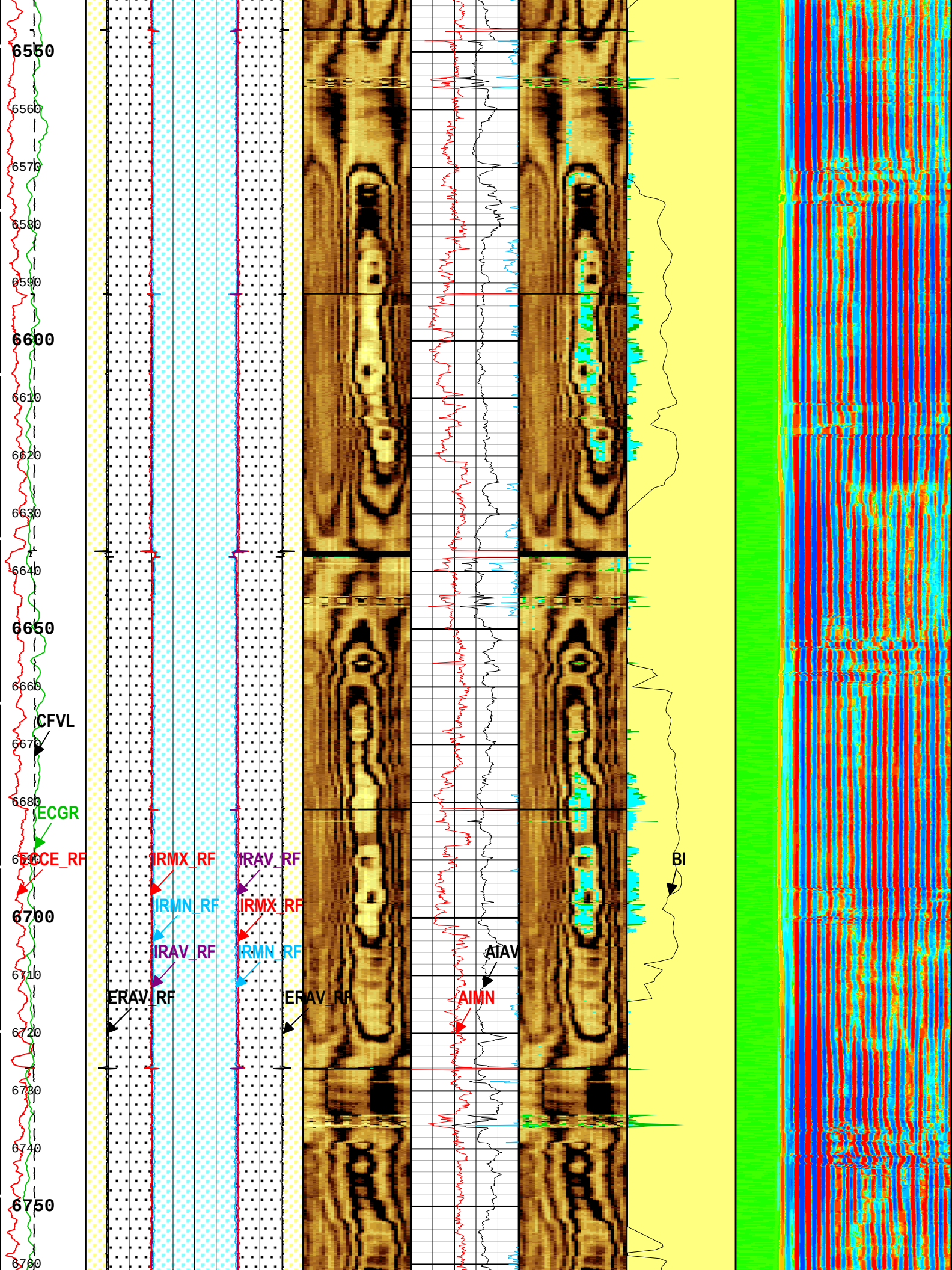

5450
5460
CFVL
5470
5480
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
5500
AIMX
AIAV
AIMN
BI
5510
ERAV_RF
ERAV_RF
5520
5530
5540
5550
5560
5570
5580
5590
5600
5610
5620
5630
5640
5650
5660

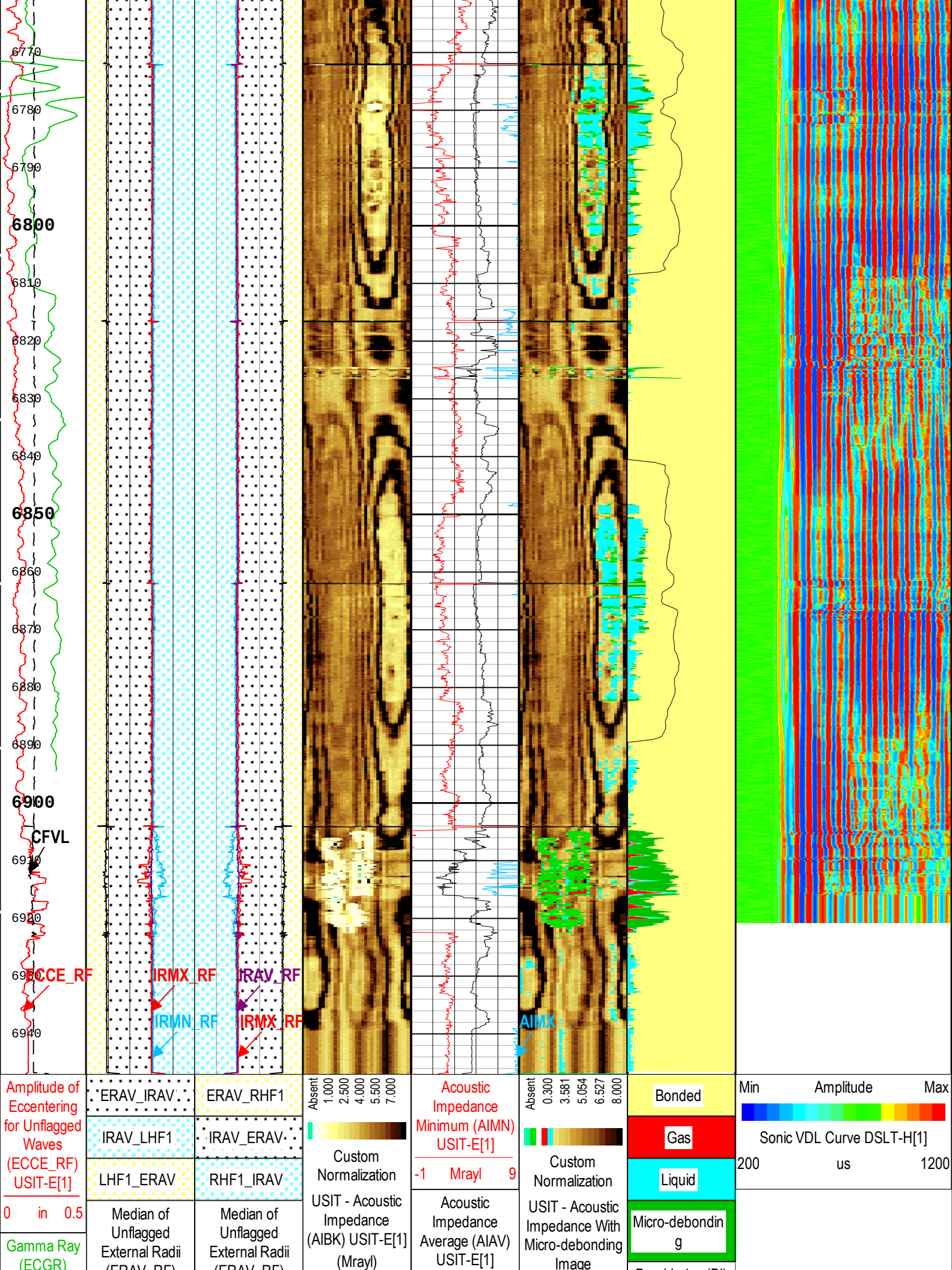

5670
5680
5690
5700
CFVL
5710
5720
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
AIMX
5740
IRAV_RF
IRMN_RF
AIAV
5750
ERAV_RF
ERAV_RF
AIMN
5760
5770
5780
5790
5800
5810
5820
5830
5840
5850
5860
5870
5880

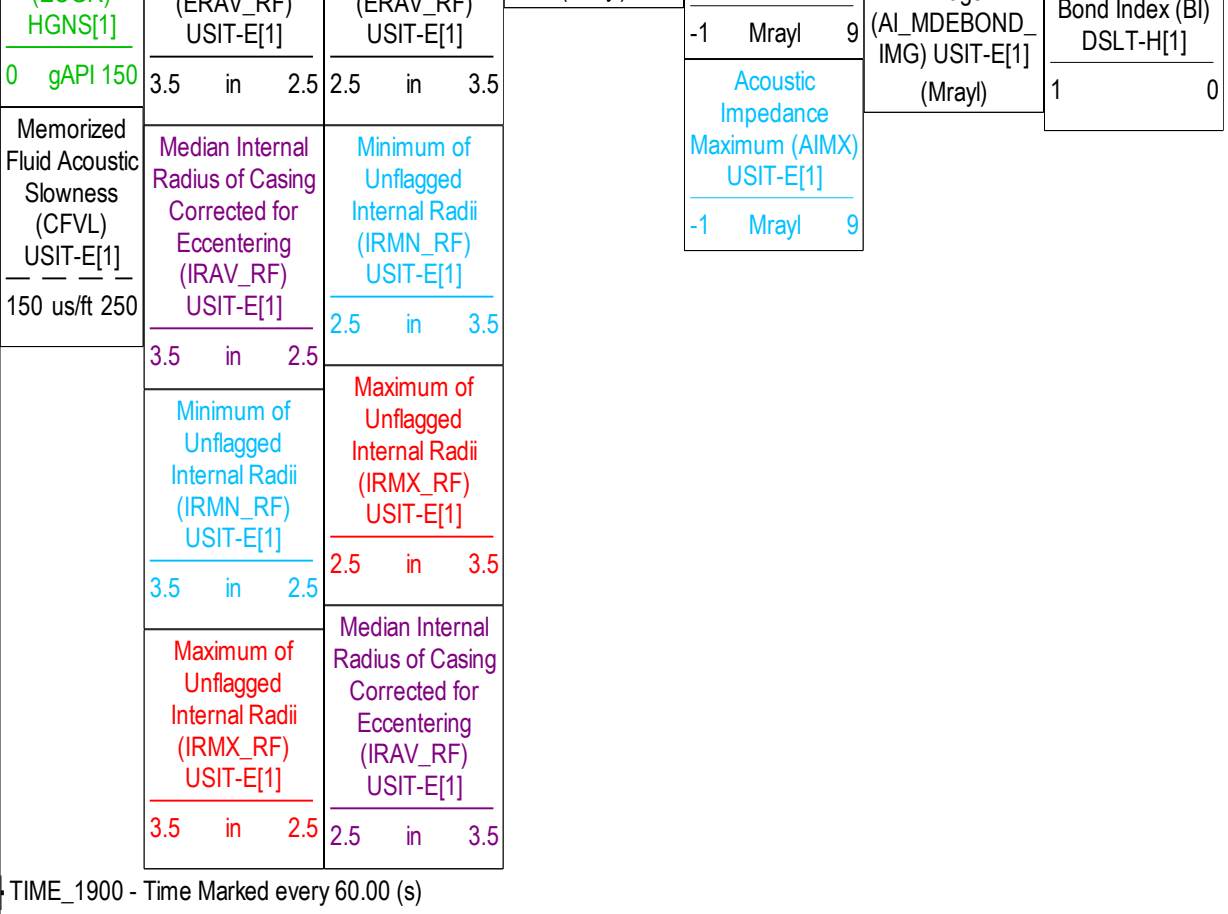

5890
5900
5910
5920
5930
5940
CFVL
5950
5960
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
BI
5980
5990
AIAV
ERAV_RF
ERAV_RF
AIMN
6000
6010
6020
6030
6040
6050
6060
6070
6080
6090
6100


6110
6120
6130
6140
6150
6160
6170
6180
CFVL
6190
6200
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
BI
6220
6230
AIAV
ERAV_RF
ERAV_RF
AIMN
6240
6250
6260
6270
6280
6290
6300
6310
6320


6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
6440
6450
6460
6470
6480
6490
6500
6510
6520
6530
6540
CFVL
ECGR
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
BI
AIAV
AIMN


6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
CFVL
6670
6680
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
6700
IRAV_RF
IRMN_RF
AIAV
6710
ERAV_RF
ERAV_RF
AIMN
6720
6730
6740
6750
6760
BI


6770
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880
6890
6900
CFVL
6910
6920
6930
6940
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
AIMX
Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5
Gamma Ray (ECGR)
ERAV_IRAV
IRAV_LHF1
LHF1_ERAV
Median of Unflagged External Radii
ERAV_RHF1
IRAV_ERAV
RHF1_IRAV
Median of Unflagged External Radii
Absent 1.000 2.500 4.000 5.500 7.000
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Acoustic Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9
Acoustic Impedance Average (AIAV) USIT-E[1]
Absent 0.300 3.581 5.054 6.527 8.000
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image
Bonded
Gas
Liquid
Micro-debonding
Min Amplitude Max
Sonic VDL Curve DSLT-H[1]
200 us 1200



Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 20-Jul-2016 09:39:30

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLG	CBL Gate Width	DSLT-H	100	us
CBLO	Casing Bottom (Logger)	WLSESSION	6954	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	65	mV
CDEN	Cement Density	HGNS-H	2	g/cm3
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.417	in
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	8.6	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	4.48	mV
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLT-H	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLT-H	10.39	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLT-H	Depth Zoned	ft

MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	26.07	us
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	2.3	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	2.3	mV
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.06	
NMSG	Near Minimum Sliding Gate	DSLT-H	215	us
NMXG	Near Maximum Sliding Gate	DSLT-H	344	us
SGAD	Sliding Gate Status	DSLT-H	Off	
SGDT	Sliding Gate Delta-T	DSLT-H	57	us/ft
SGW	Sliding Gate Width	DSLT-H	60	us
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
ZMUD	Acoustic Impedance of Mud	Borehole	1.48	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

ONEDepth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	17.5	5	724
BS	11	724	6947
MCI	21.68	5	724
MCI	12.98	724	6947

All depth are actual.

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
MODE	DSLT Acquisition Mode	DSLT-H	CBLB	
RATE	DSLT Firing Rate	DSLT-H	15 Hz	
DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	6940	ft
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	Time Zoned	us

ONETime Zoned Parameters

Pass Log[7]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	32	19-Jul-2016 09:27:50	19-Jul-2016 10:19:48	6947.38	5458.47
EMXV	30	19-Jul-2016 10:19:48	19-Jul-2016 12:13:06	5458.47	188.25
WINB	26.8	19-Jul-2016 09:27:59	19-Jul-2016 12:13:06	6947.38	188.25
WINE	65.79	19-Jul-2016 09:27:59	19-Jul-2016 12:13:06	6947.38	188.25

Pass Log[9]:Up

EMXV	32	19-Jul-2016 14:00:33	19-Jul-2016 14:07:42	188.25	12.63
WINB	30.08	19-Jul-2016 14:00:33	19-Jul-2016 14:07:42	188.25	12.63
WINE	70.08	19-Jul-2016 14:00:33	19-Jul-2016 14:07:42	188.25	12.63

All depth are at tool zero.

ONE

Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[6]:Up	Up	6499.92 ft	6947.18 ft	19-Jul-2016 9:08:18 AM	19-Jul-2016 9:24:08 AM	ON	7.00 ft	No

All depths are referenced to toolstring zero

Log

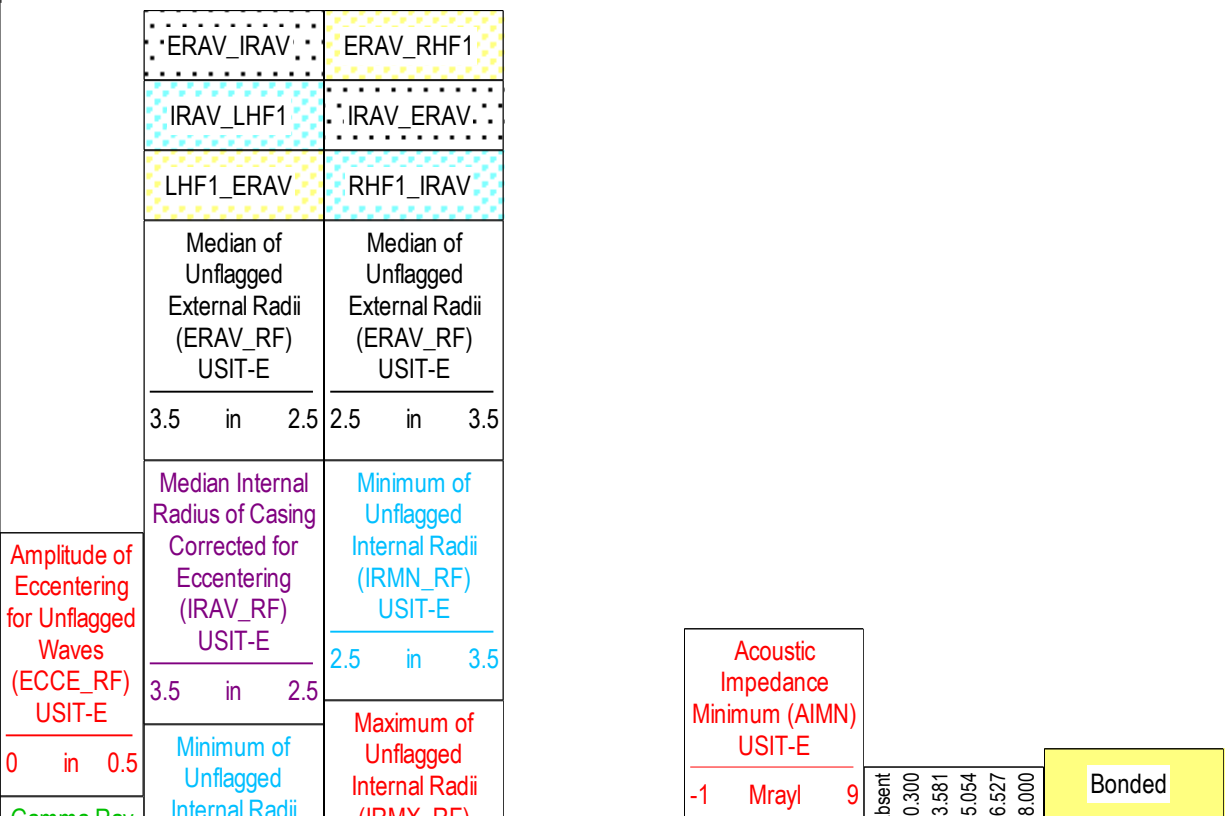
Company:Southern California Gas Company Well:FF-32F (IW 62)

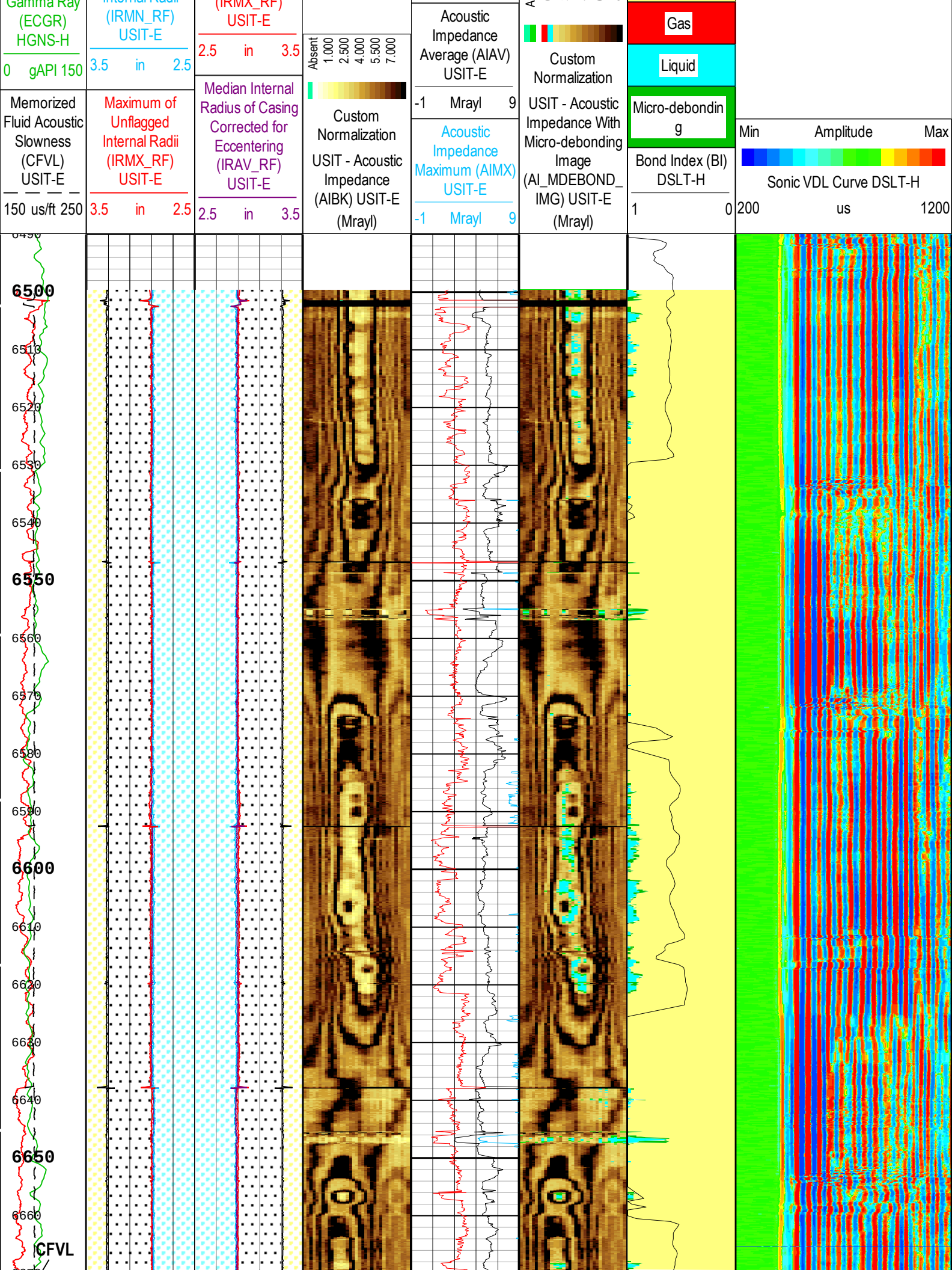
ONE: Log[6]:Up:S006

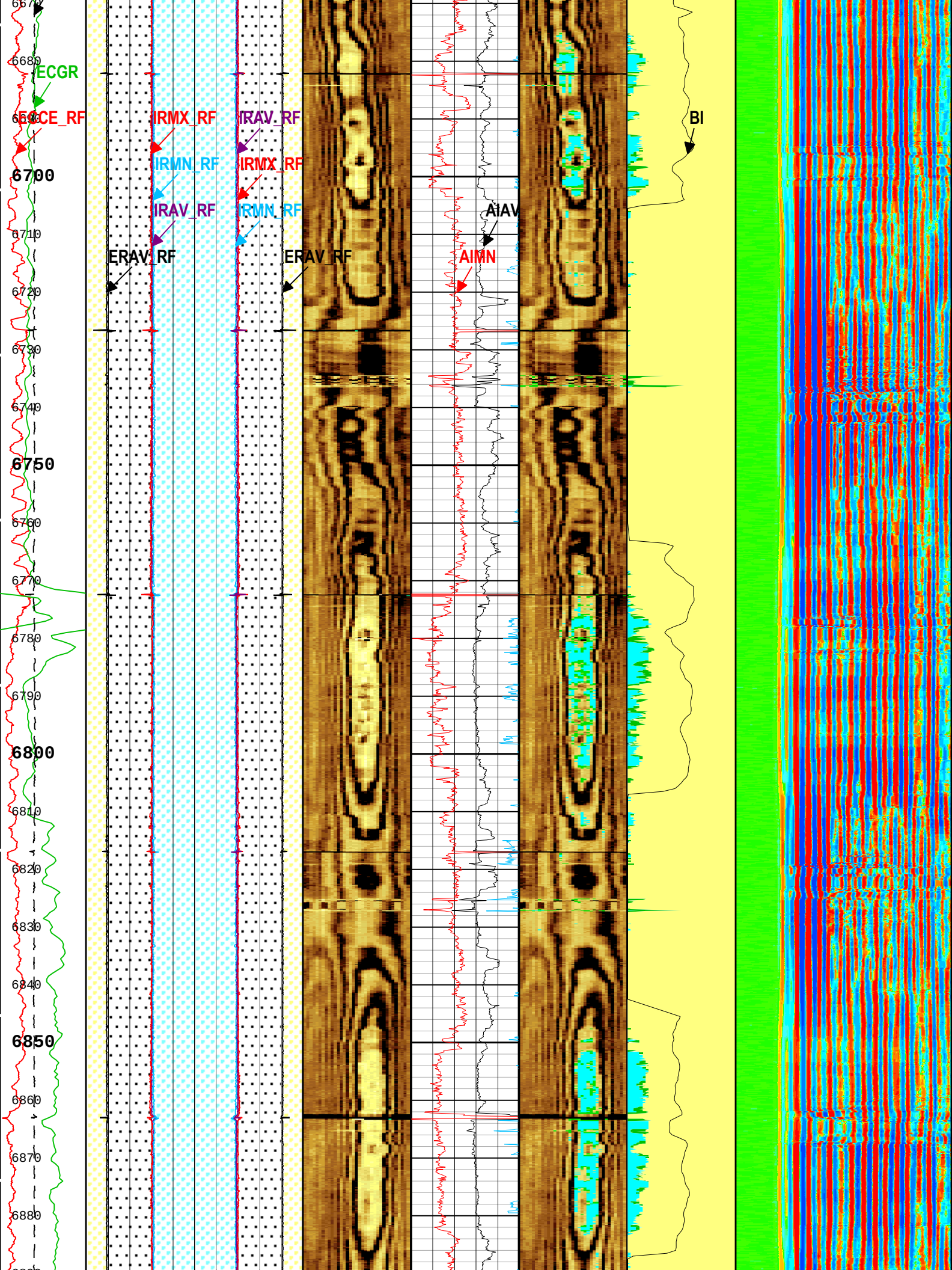
Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

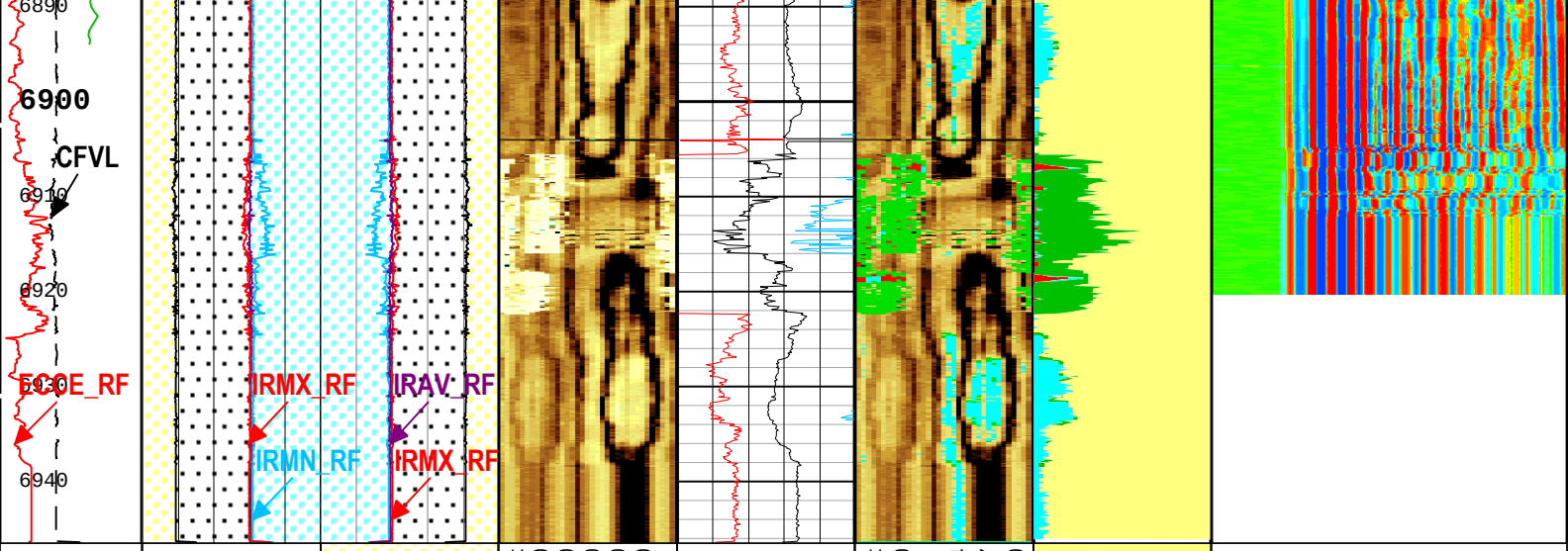
Creation Date: 20-Jul-2016 09:40:07

TIME_1900 - Time Marked every 60.00 (s)




Gamma Ray (ECGR) HGNS-H
0 gAPI 150
Memorized Fluid Acoustic Slowness (CFVL) USIT-E
150 us/ft 250
Internal Radii (IRMN_RF) USIT-E
3.5 in 2.5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 2.5
(IRMX_RF) USIT-E
2.5 in 3.5
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
2.5 in 3.5
Absent 1.000 2.500 4.000 5.500 7.000
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)
Acoustic Impedance Average (AIAV) USIT-E
-1 Mrayl 9
Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)
Gas
Liquid
Micro-debonding
Bond Index (BI) DSLT-H
1 0
Min Amplitude Max
Sonic VDL Curve DSLT-H
200 us 1200
6500
6510
6520
6530
6540
6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
CFVL


ECGR
ECCE_RF
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
IRAV_RF
IRMX_RF
IRMN_RF
ERAV_RF
AIAV
AIMN
BI
6670
6680
6690
6700
6710
6720
6730
6740
6750
6760
6770
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880



Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Gamma Ray (ECGR) HGNS-H
0 gAPI 150

Memorized Fluid Acoustic Slowness (CFVL) USIT-E
150 us/ft 250

ERAV_IRAV | ERAV_RHF1
IRAV_LHF1 | IRAV_ERAV
LHF1_ERAV | RHF1_IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.5 in 2.5

Median of Unflagged External Radii (ERAV_RF) USIT-E
2.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.5 in 2.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
2.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.5 in 2.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
2.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 2.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
2.5 in 3.5

Absent 1.000 2.500 4.000 5.500 7.000
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)

Acoustic Impedance Minimum (AIMN) USIT-E
-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E
-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9

Absent 0.300 3.581 5.054 6.527 8.000
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)

Bonded
Gas
Liquid
Micro-debonding
Bond Index (BI) DSLT-H
1 0

Min Amplitude Max
Sonic VDL Curve DSLT-H
200 us 1200

TIME_1900 - Time Marked every 60.00 (s)

Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 20-Jul-2016 09:40:07

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	

BS	Bit Size	WLSESSION	11	in
CBLG	CBL Gate Width	DSLT-H	100	us
CBLO	Casing Bottom (Logger)	WLSESSION	6954	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	65	mV
CDEN	Cement Density	HGNS-H	2	g/cm3
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.417	in
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	8.6	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	4.48	mV
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLT-H	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLT-H	10.39	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLT-H	12.98	ft
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	26.07	us
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	2.3	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	2.3	mV
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.06	
NMSG	Near Minimum Sliding Gate	DSLT-H	215	us
NMXG	Near Maximum Sliding Gate	DSLT-H	344	us
SGAD	Sliding Gate Status	DSLT-H	Off	
SGDT	Sliding Gate Delta-T	DSLT-H	55	us/ft
SGW	Sliding Gate Width	DSLT-H	60	us
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
ZMUD	Acoustic Impedance of Mud	Borehole	1.48	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
MODE	DSLT Acquisition Mode	DSLT-H	CBL	
RATE	DSLT Firing Rate	DSLT-H	15 Hz	

DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
EMXV	EMEX Voltage	USIT-E	32	V
HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	6940	ft
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	26.8	us
WINE	Window End Time	USIT-E	65.79	us

Composite 1

Main Pass 5 IN = 100 FT

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[7]:Up	Up	85.65 ft	6947.43 ft	19-Jul-2016 9:27:50 AM	19-Jul-2016 12:13:06 PM	ON	7.00 ft	No
ONE	Log[9]:Up	Up	12.53 ft	336.93 ft	19-Jul-2016 1:55:07 PM	19-Jul-2016 2:07:42 PM	ON	17.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:FF-32F (IW 62)

Composite 1:S006

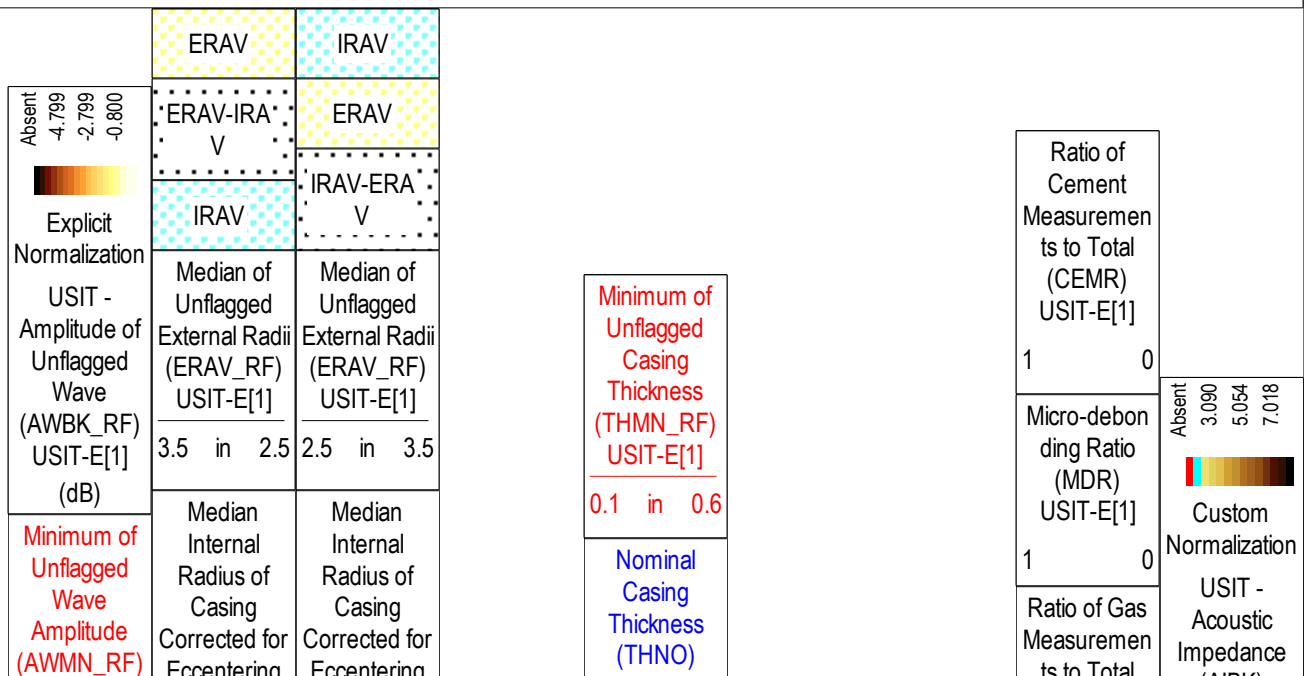
Description: USI Composite Format: Log (LBV1_USI Composite 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jul-2016 09:40:13

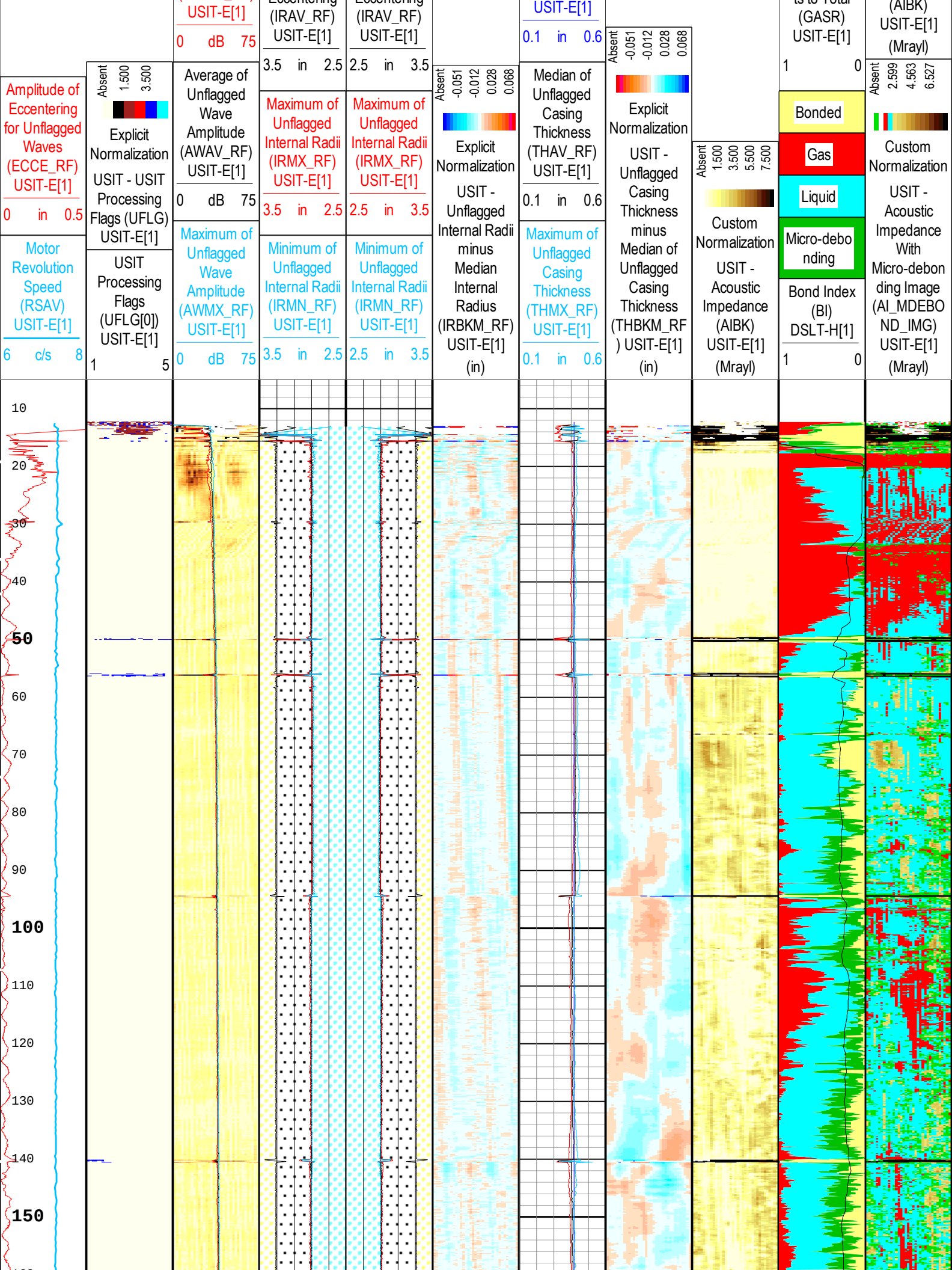
TIME_1900 - Time Marked every 60.00 (s)

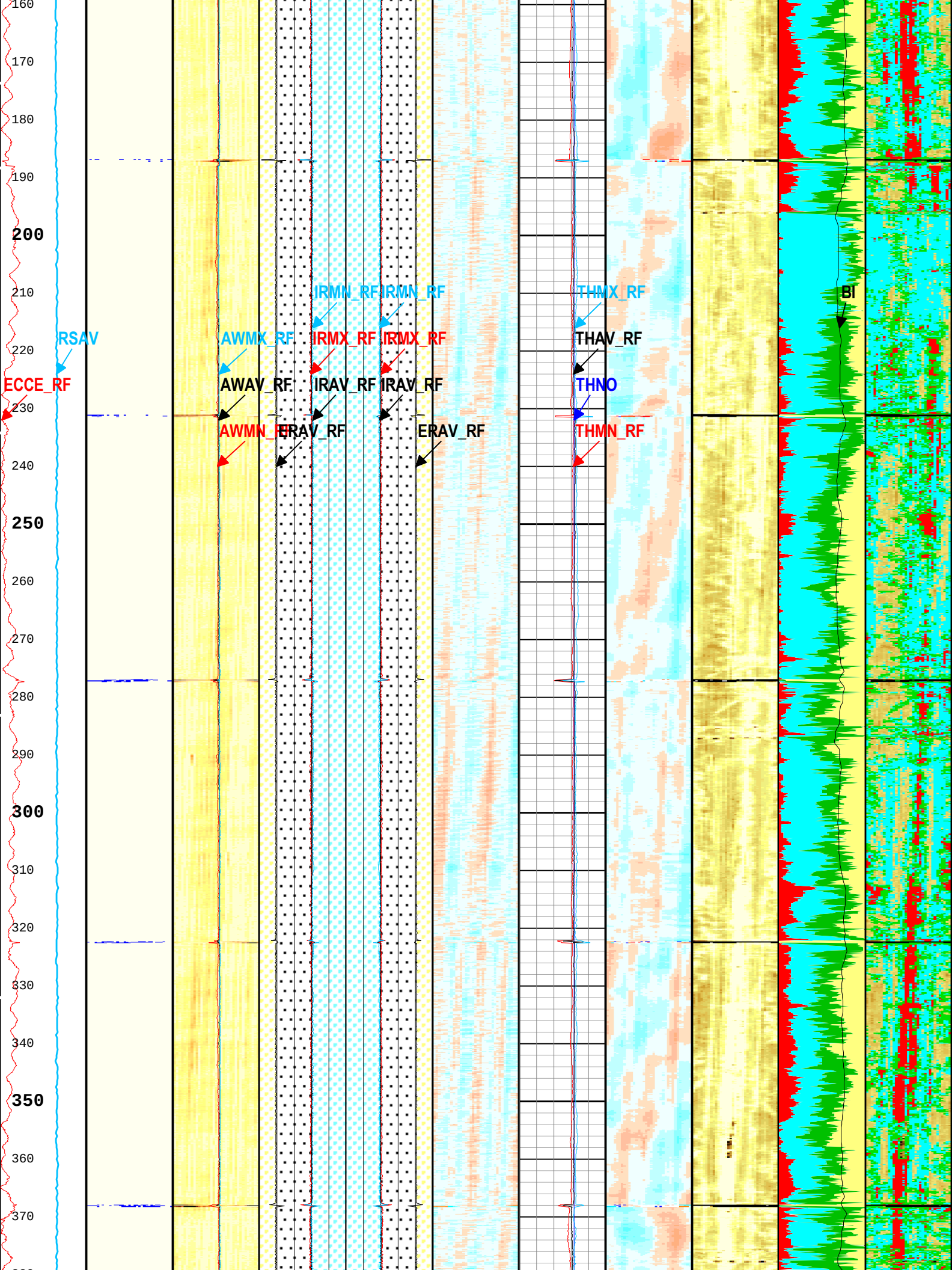
USIT Processing Flags (UFLG[0]) USIT-E[1]

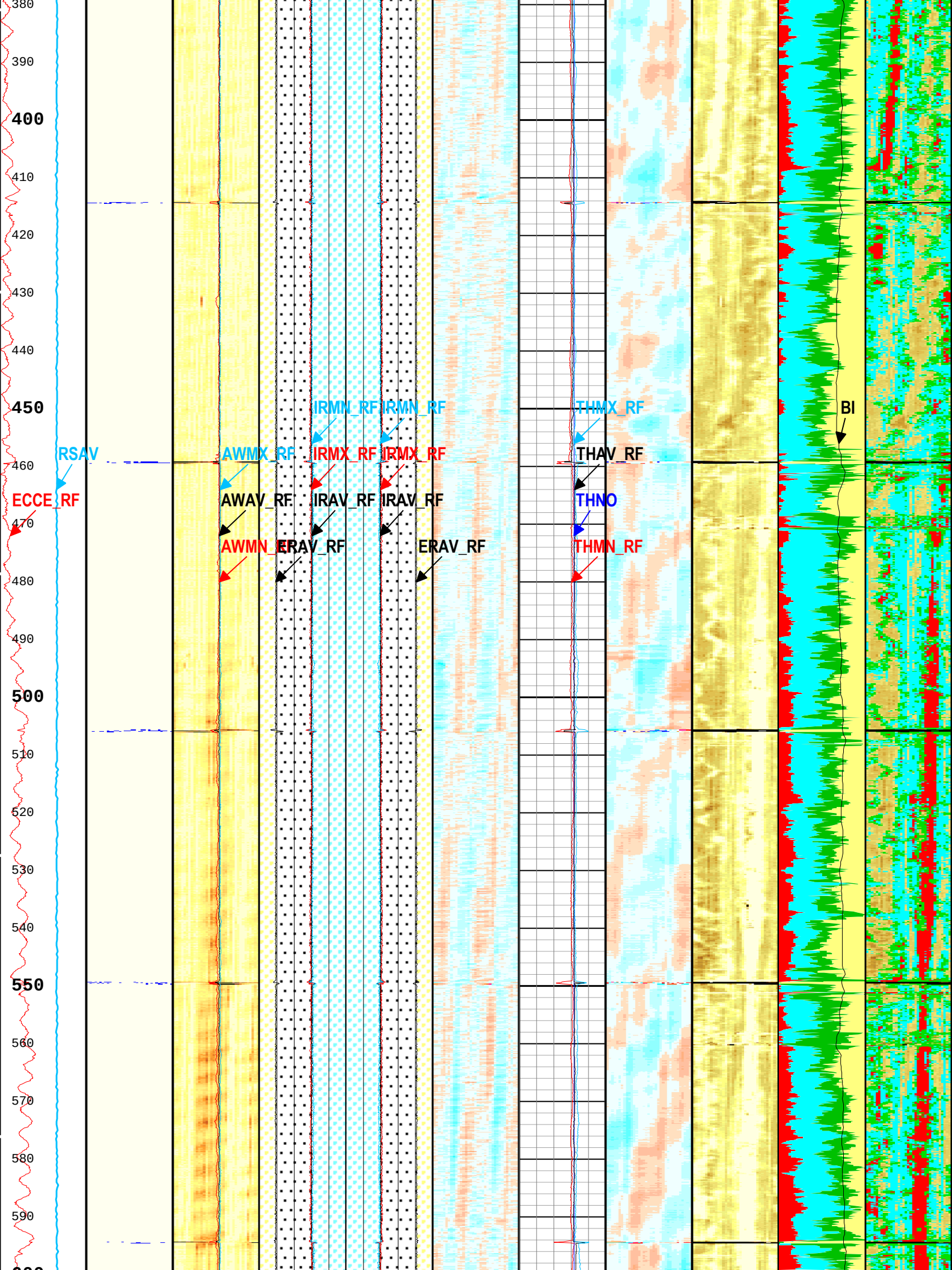
1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

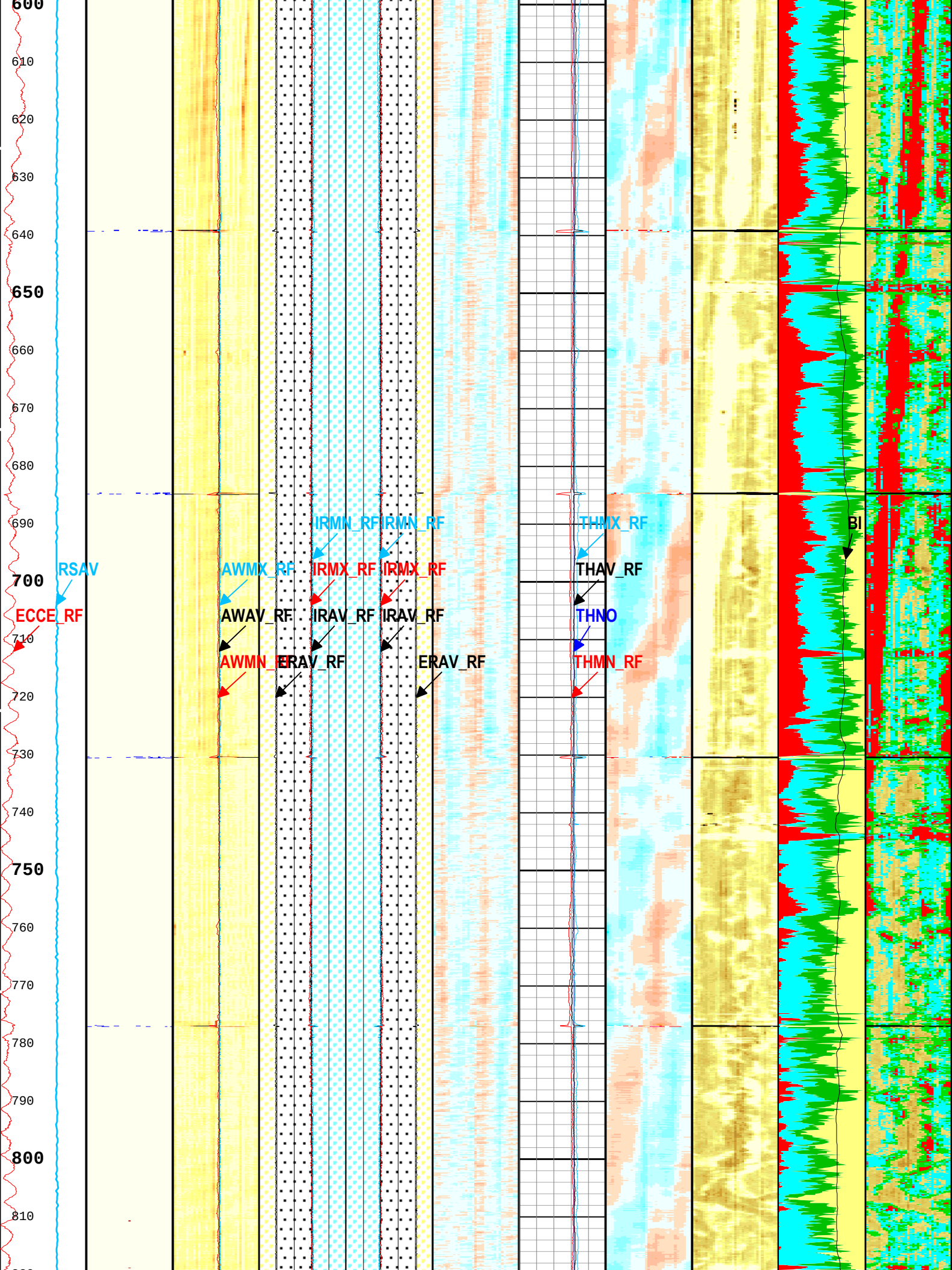
- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error

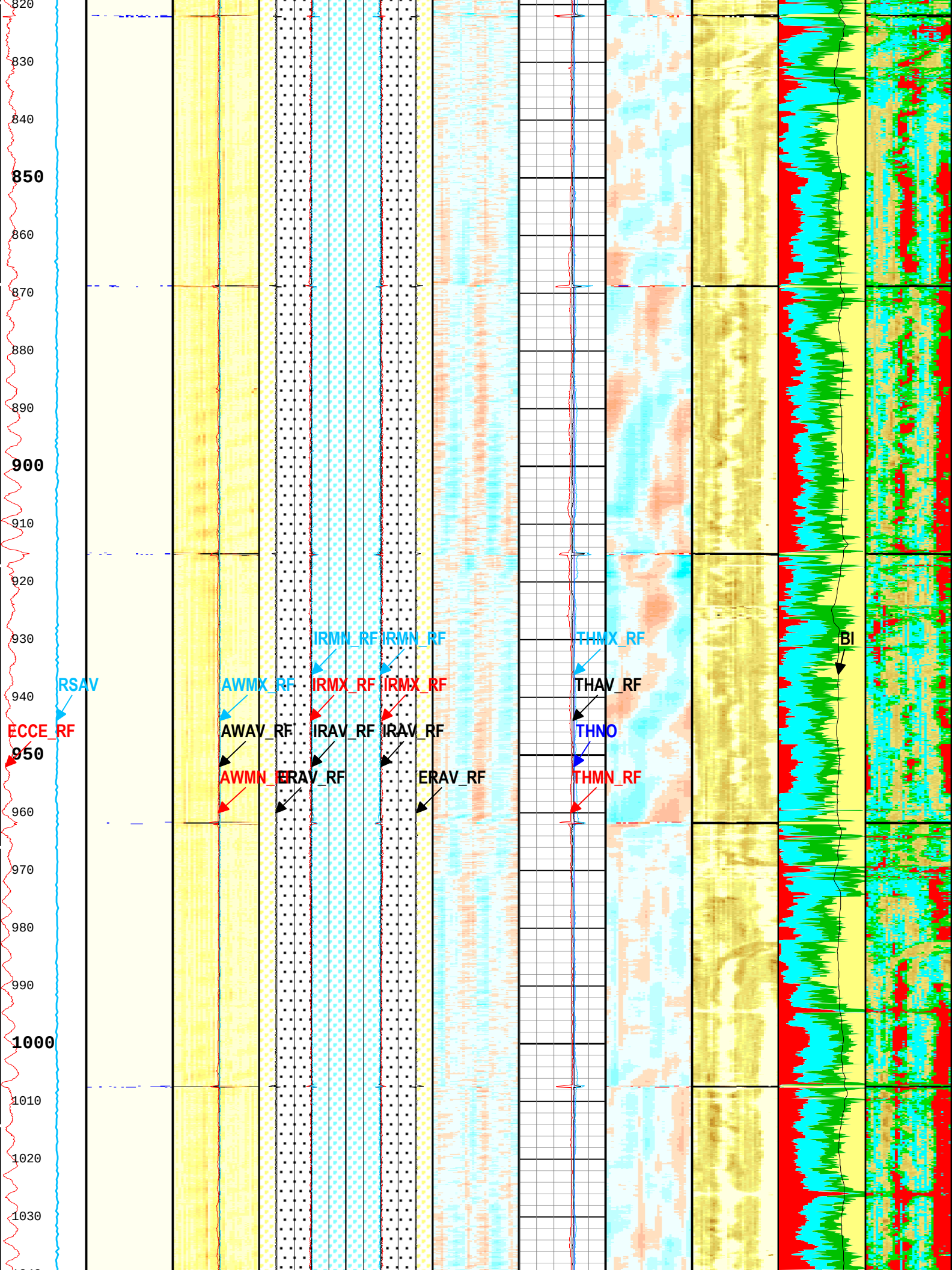


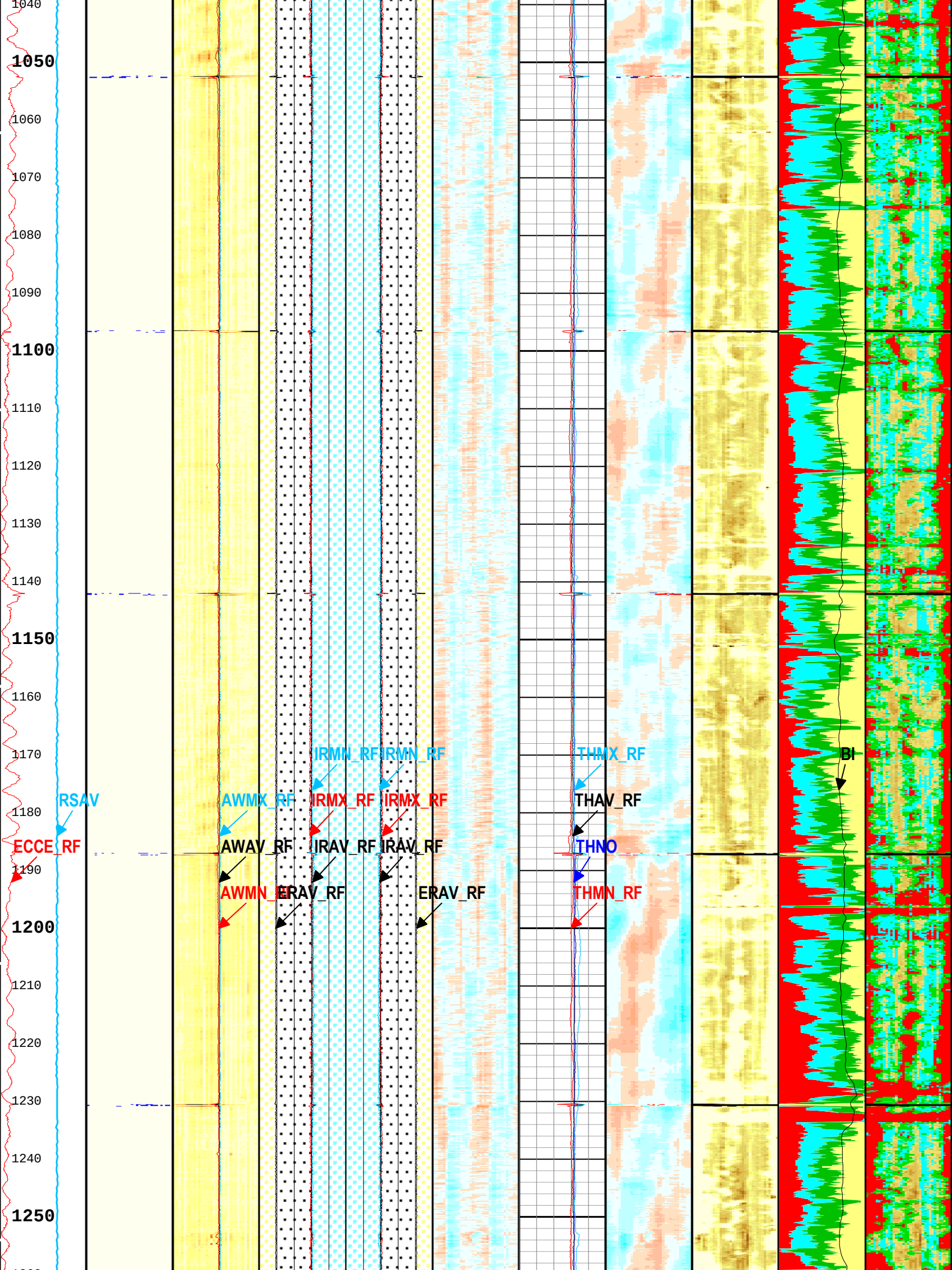

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5
Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8
Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E[1]
USIT Processing Flags (UFLG[0]) USIT-E[1]
1 5
USIT-E[1]
0 dB 75
Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E[1]
0 dB 75
Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E[1]
0 dB 75
(IRAV_RF) USIT-E[1]
3.5 in 2.5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
3.5 in 2.5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.5 in 2.5
(IRAV_RF) USIT-E[1]
2.5 in 3.5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
2.5 in 3.5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
2.5 in 3.5
Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E[1]
(in)
USIT-E[1]
0.1 in 0.6
Median of Unflagged Casing Thickness (THAV_RF) USIT-E[1]
0.1 in 0.6
Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E[1]
0.1 in 0.6
Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E[1]
(in)
Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1]
(Mrayl)
(GASR) USIT-E[1]
1 0
Bonded
Gas
Liquid
Micro-debonding
Bond Index (BI) DSLT-H[1]
1 0
(AIBK) USIT-E[1]
(Mrayl)
Absent 2.599 4.563 6.527
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1]
(Mrayl)
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150

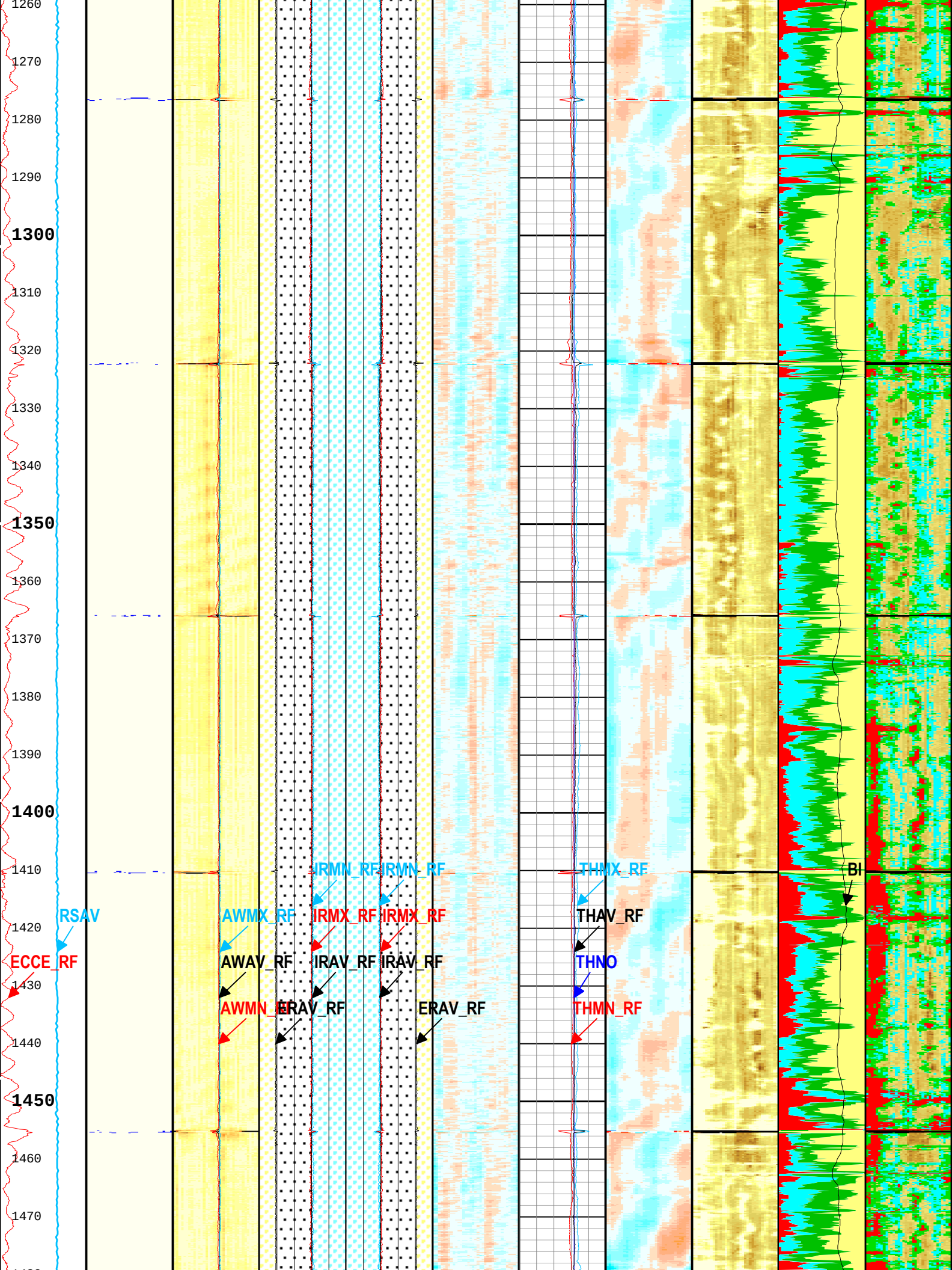

160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
360
370
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

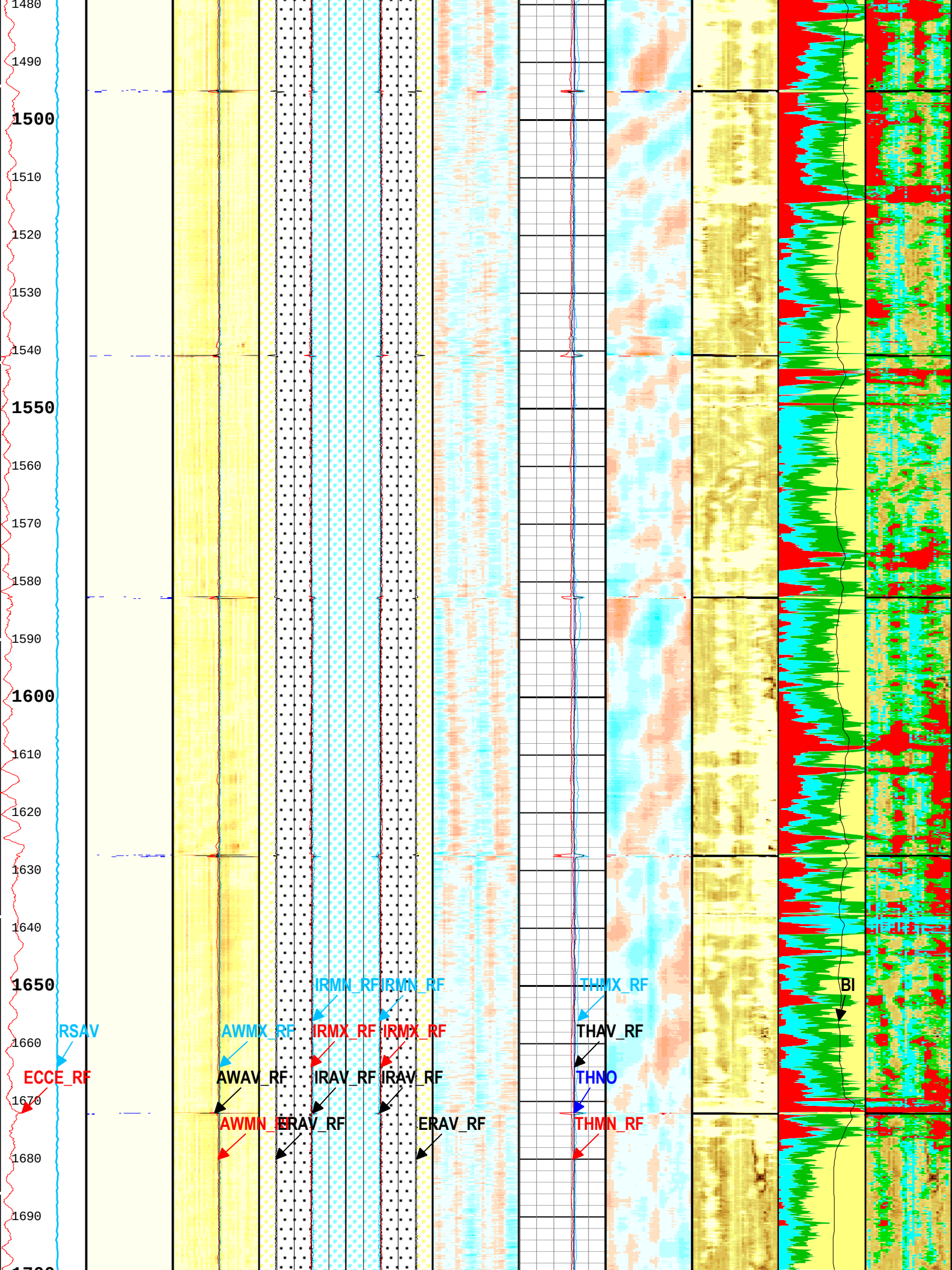

380
390
400
410
420
430
440
450
460
470
480
490
500
510
520
530
540
550
560
570
580
590
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

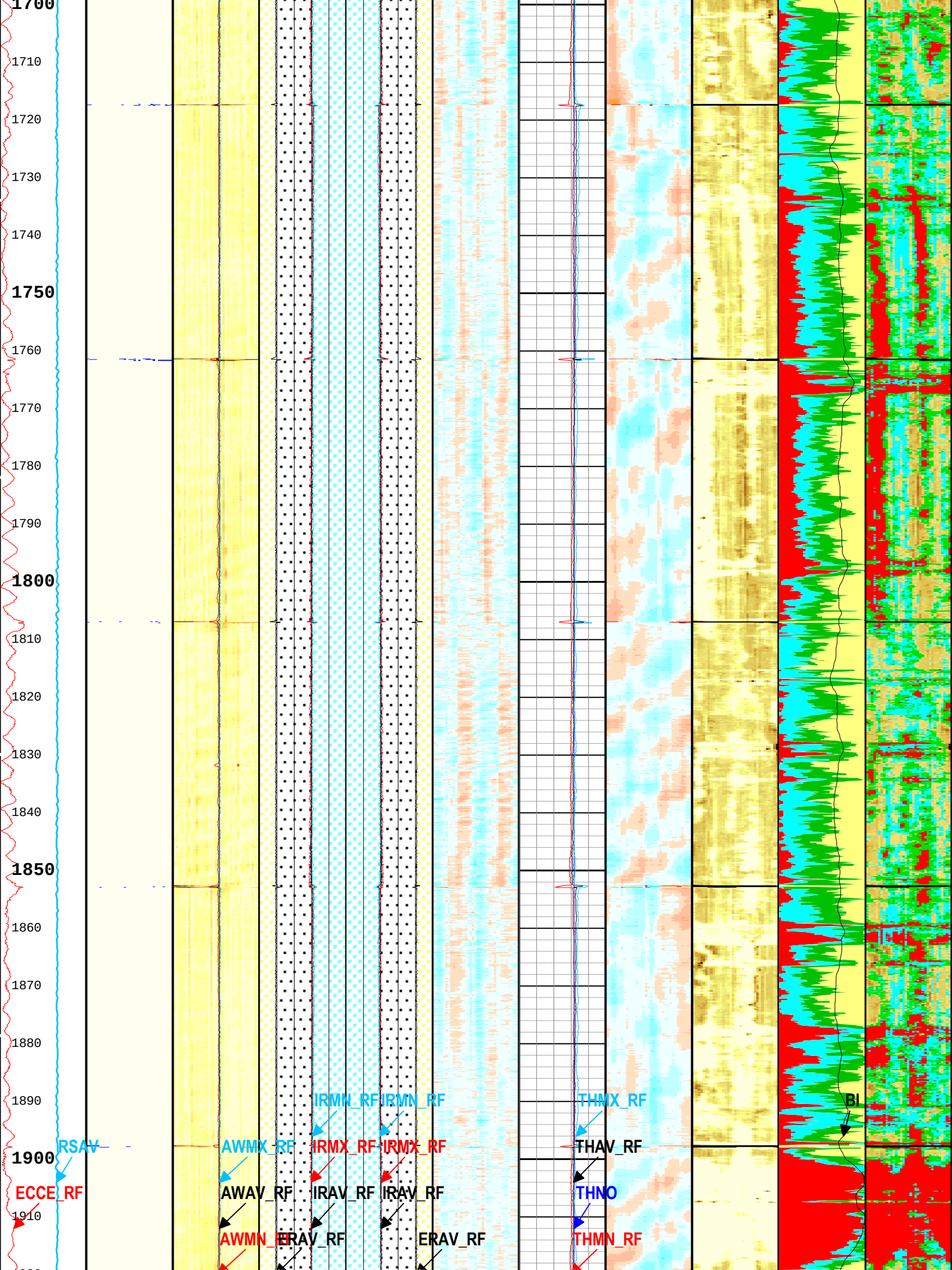

600
610
620
630
640
650
660
670
680
690
700
710
720
730
740
750
760
770
780
790
800
810
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

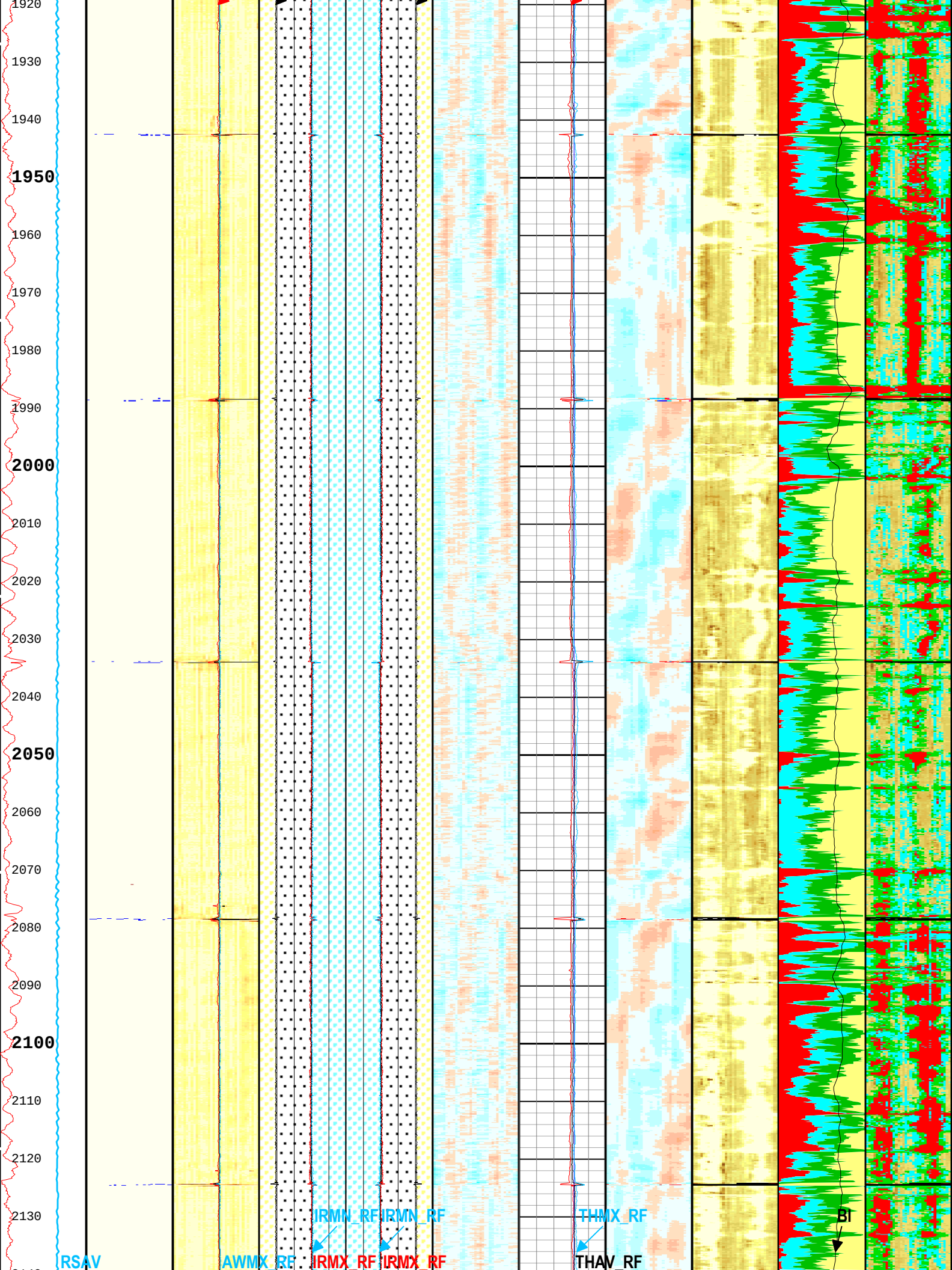

820
830
840
850
860
870
880
890
900
910
920
930
940
950
960
970
980
990
1000
1010
1020
1030
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

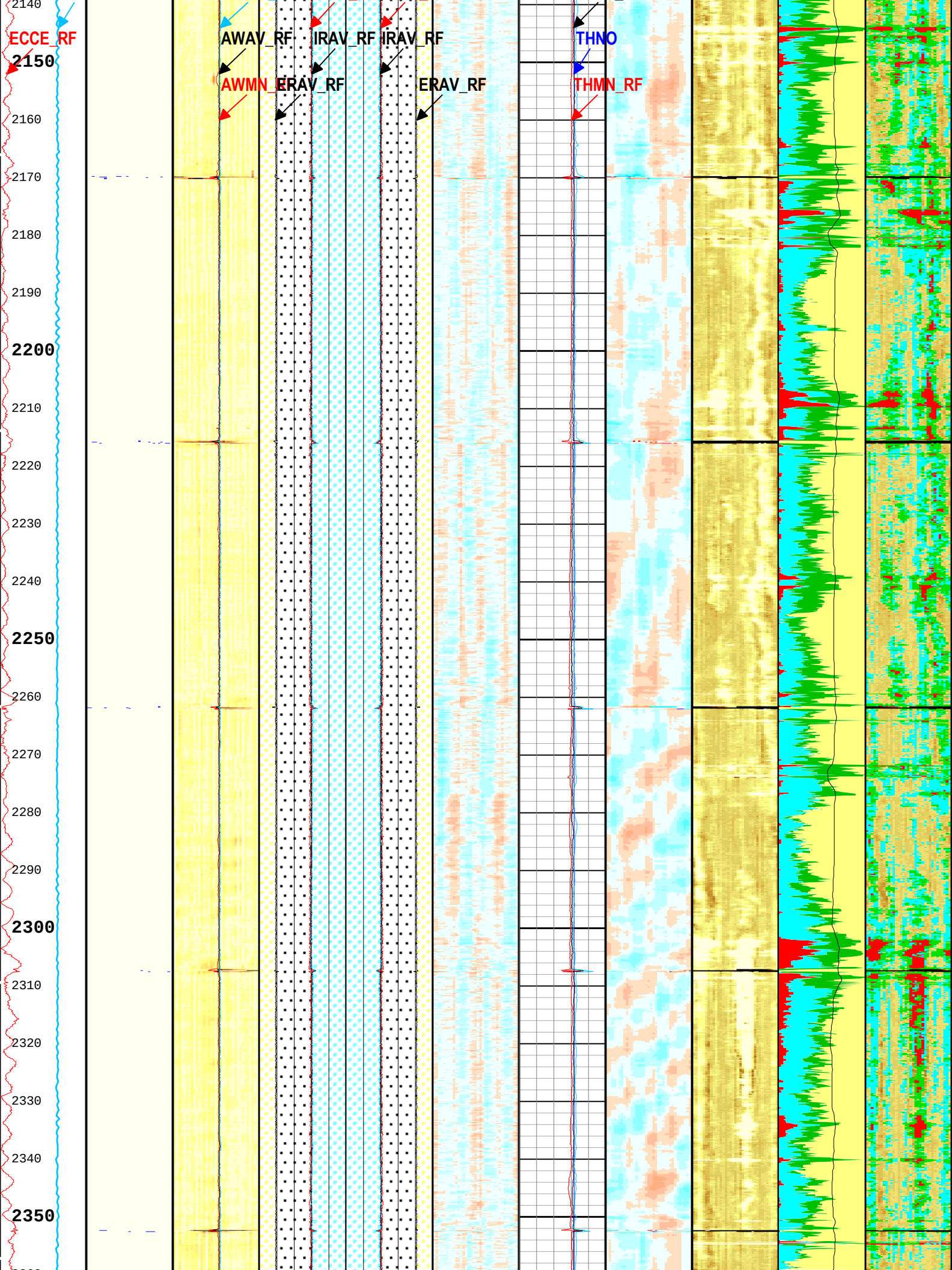

1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
1180
1190
1200
1210
1220
1230
1240
1250
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

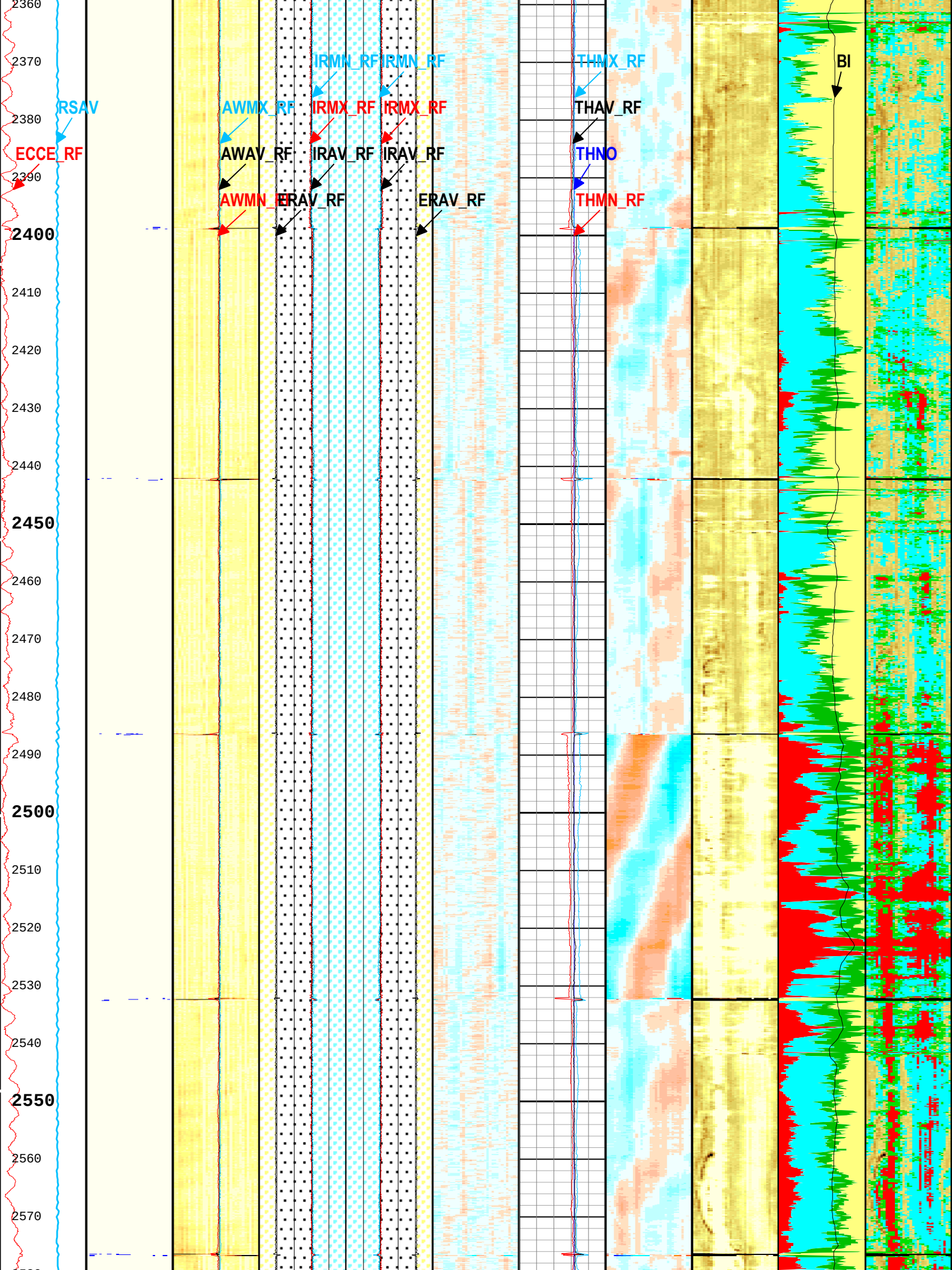

1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410
1420
1430
1440
1450
1460
1470
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

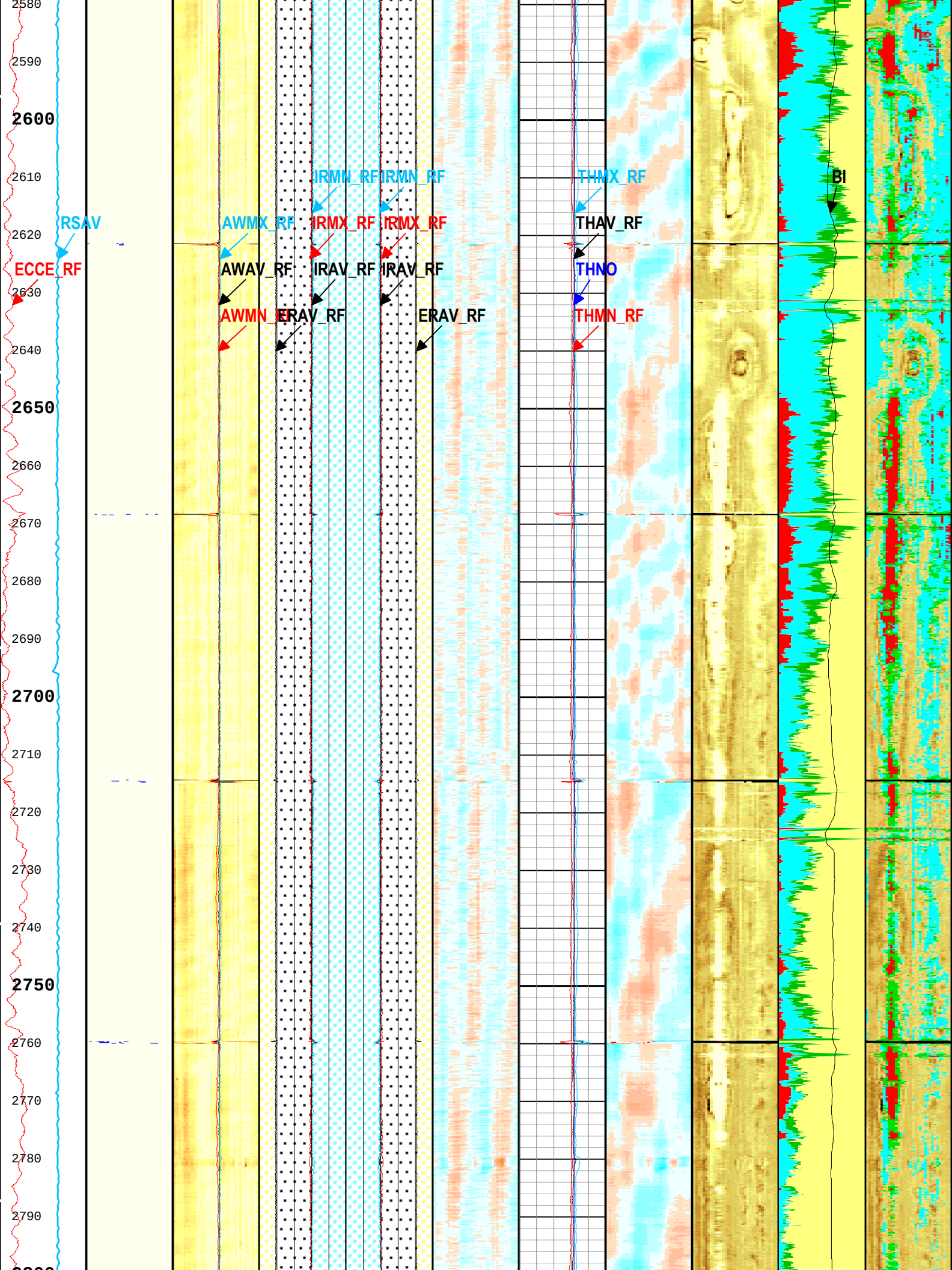

1480
1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
1630
1640
1650
1660
1670
1680
1690
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMN_RF
IRMX_RF
IRMX_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

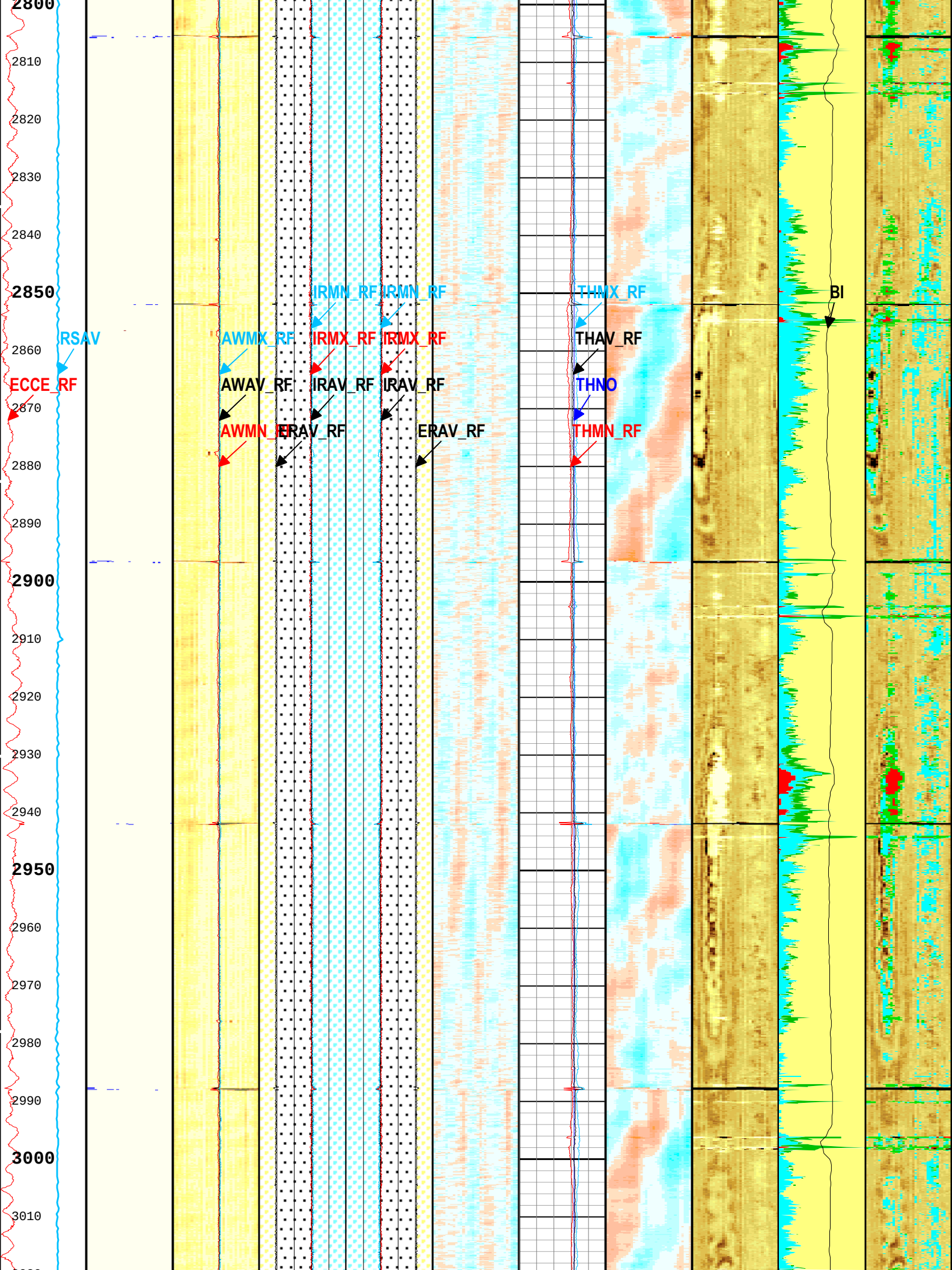

1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
1850
1860
1870
1880
1890
1900
1910
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

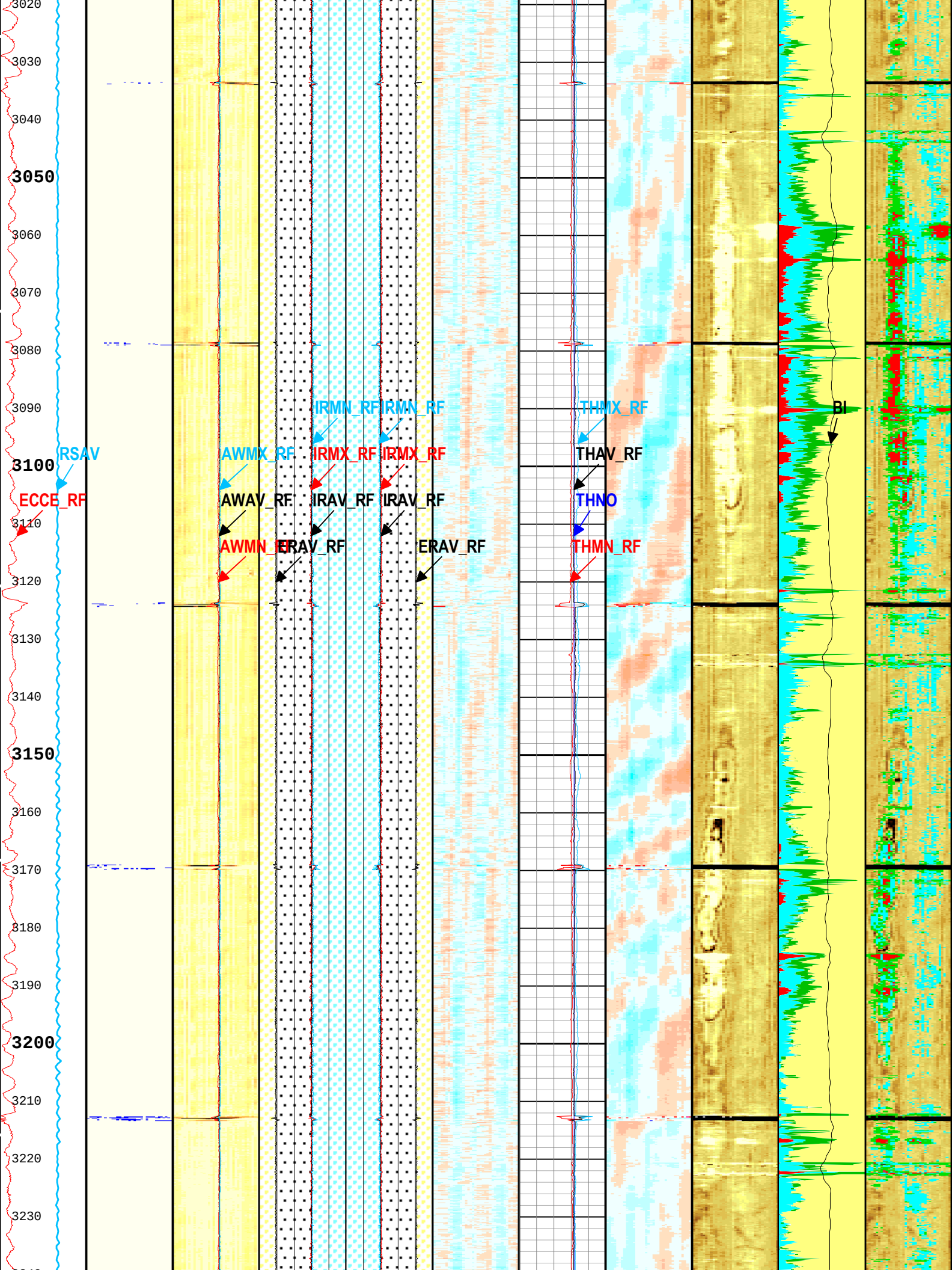

1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
RSAV
AWMX_RF
IRMN_RF
IRMX_RF
IRMN_RF
IRMX_RF
THMX_RF
THAV_RF
BI

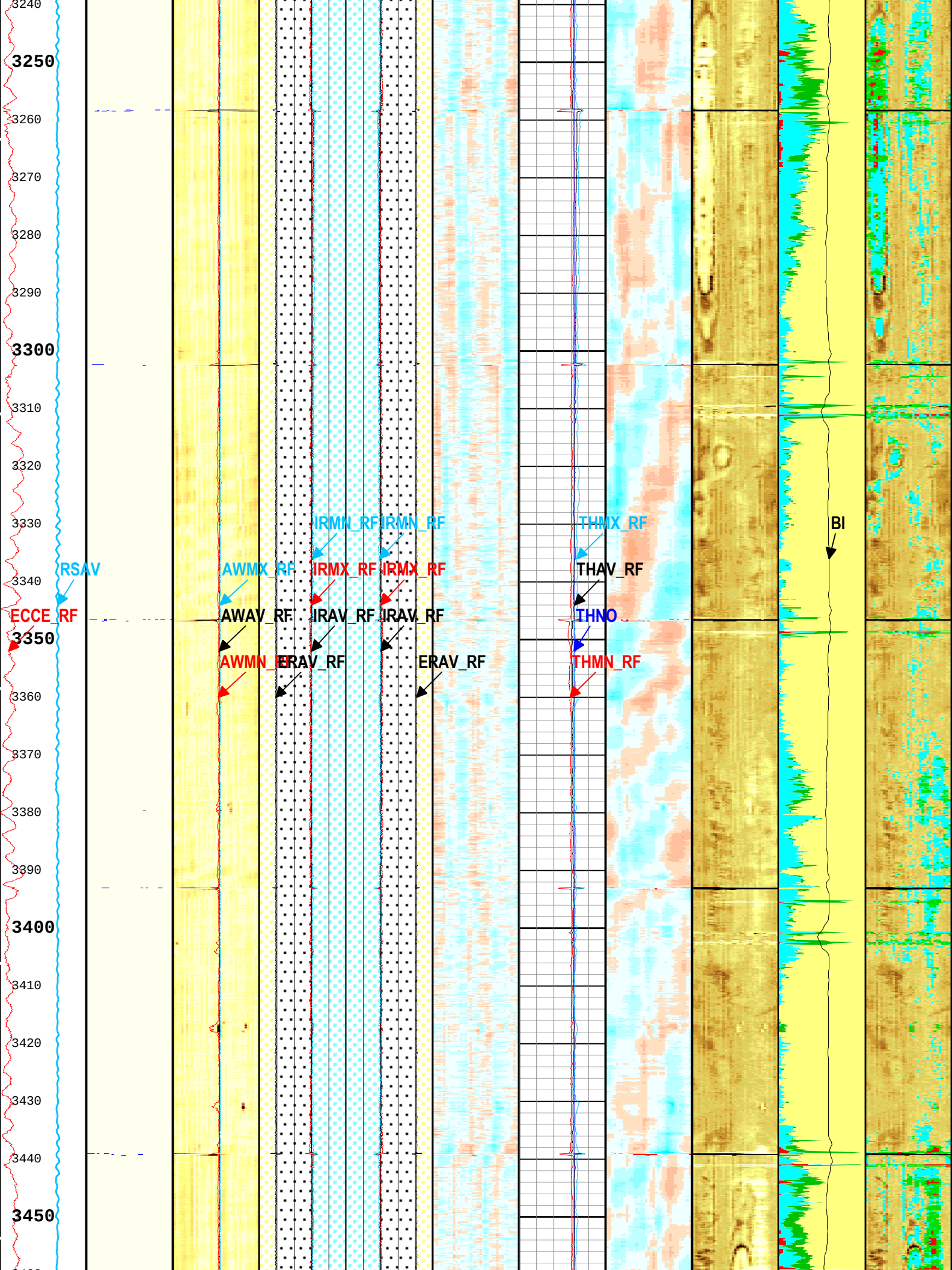

ECCE_RF
AWAV_RF
IRAV_RF
IRAV_RF
THNO
AWMN_RF
ERAV_RF
ERAV_RF
THMN_RF
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350

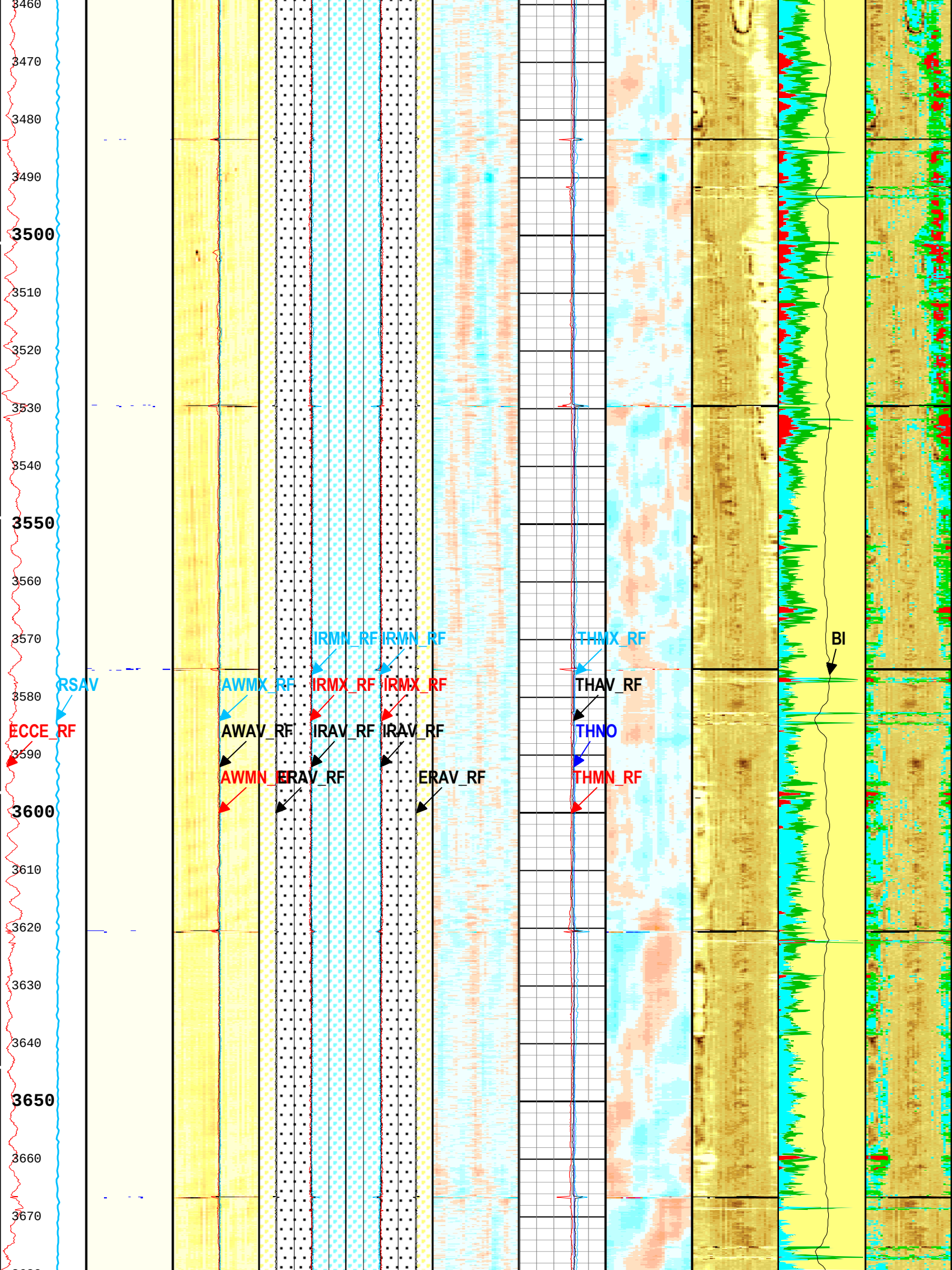

2360
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

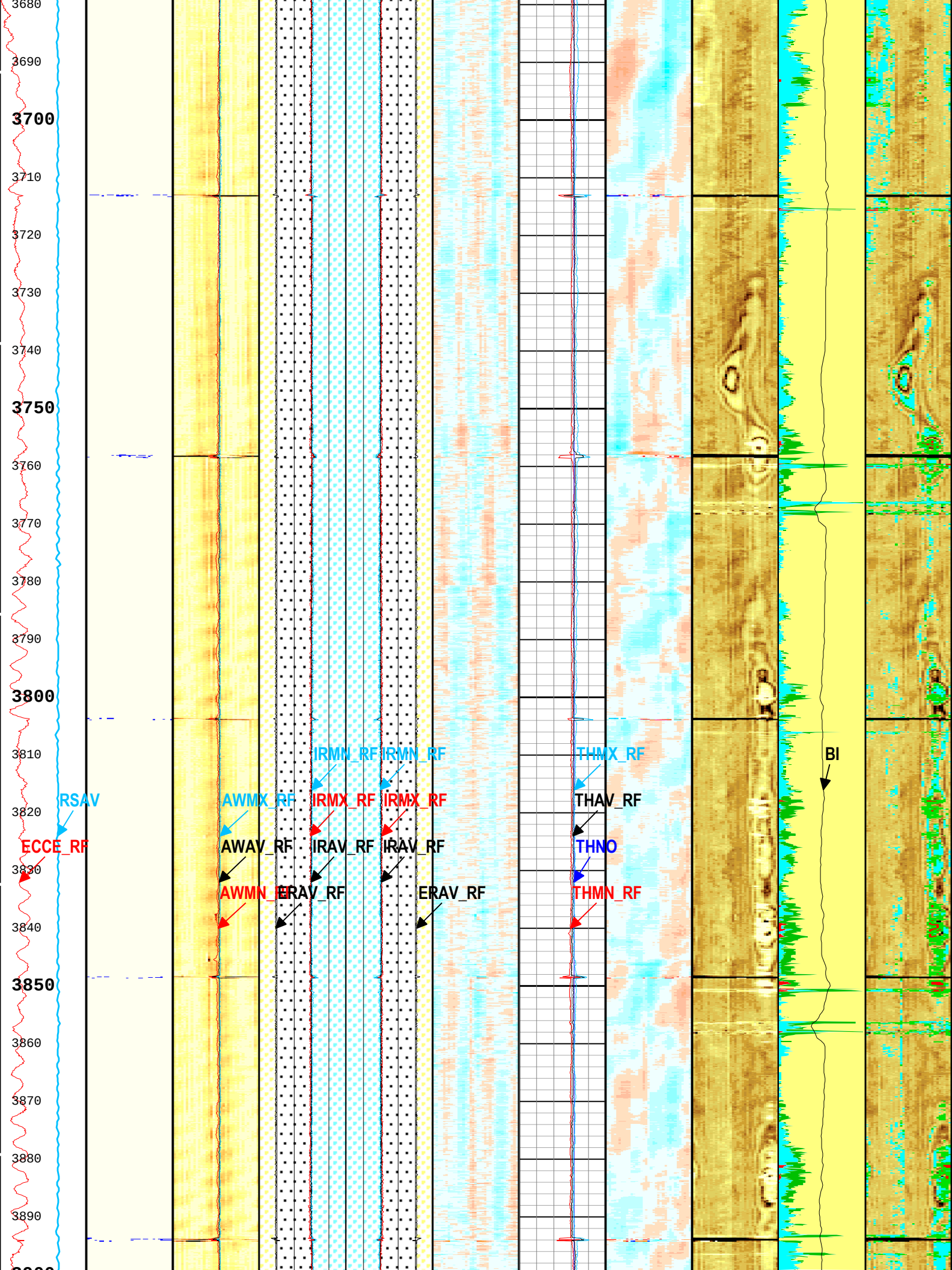

2580
2590
2600
2610
2620
2630
2640
2650
2660
2670
2680
2690
2700
2710
2720
2730
2740
2750
2760
2770
2780
2790
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

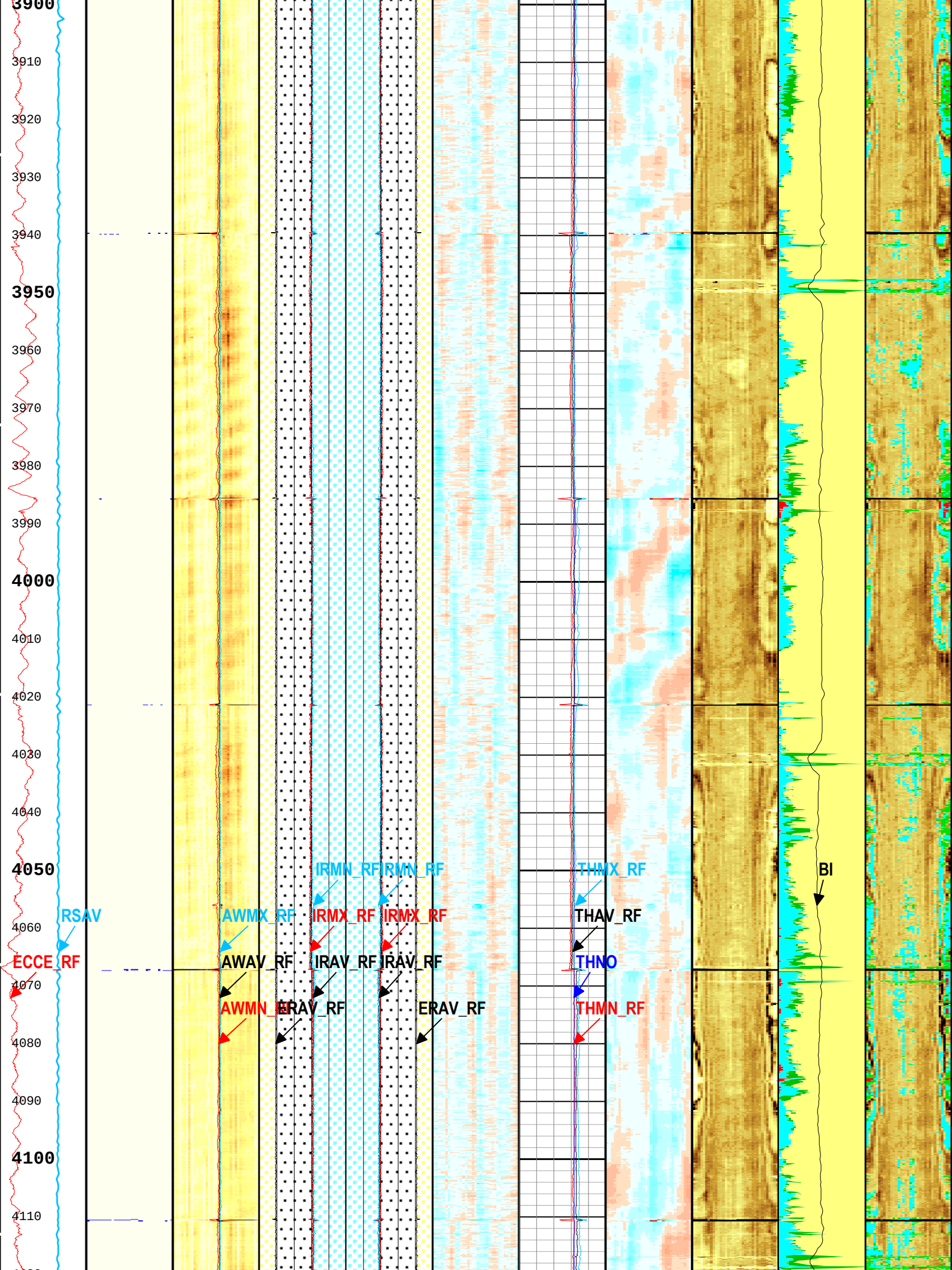

2800
2810
2820
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

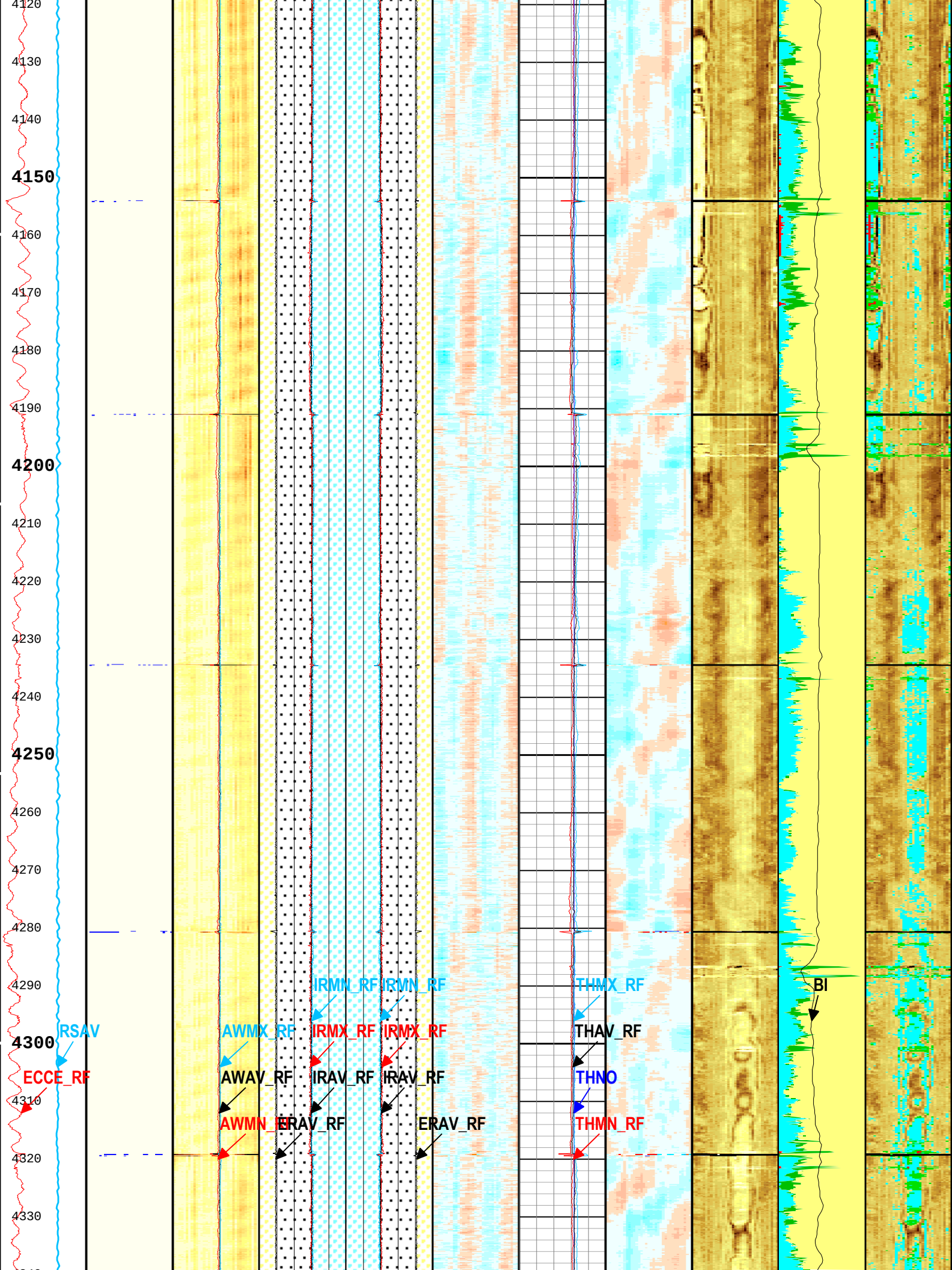

3020
3030
3040
3050
3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

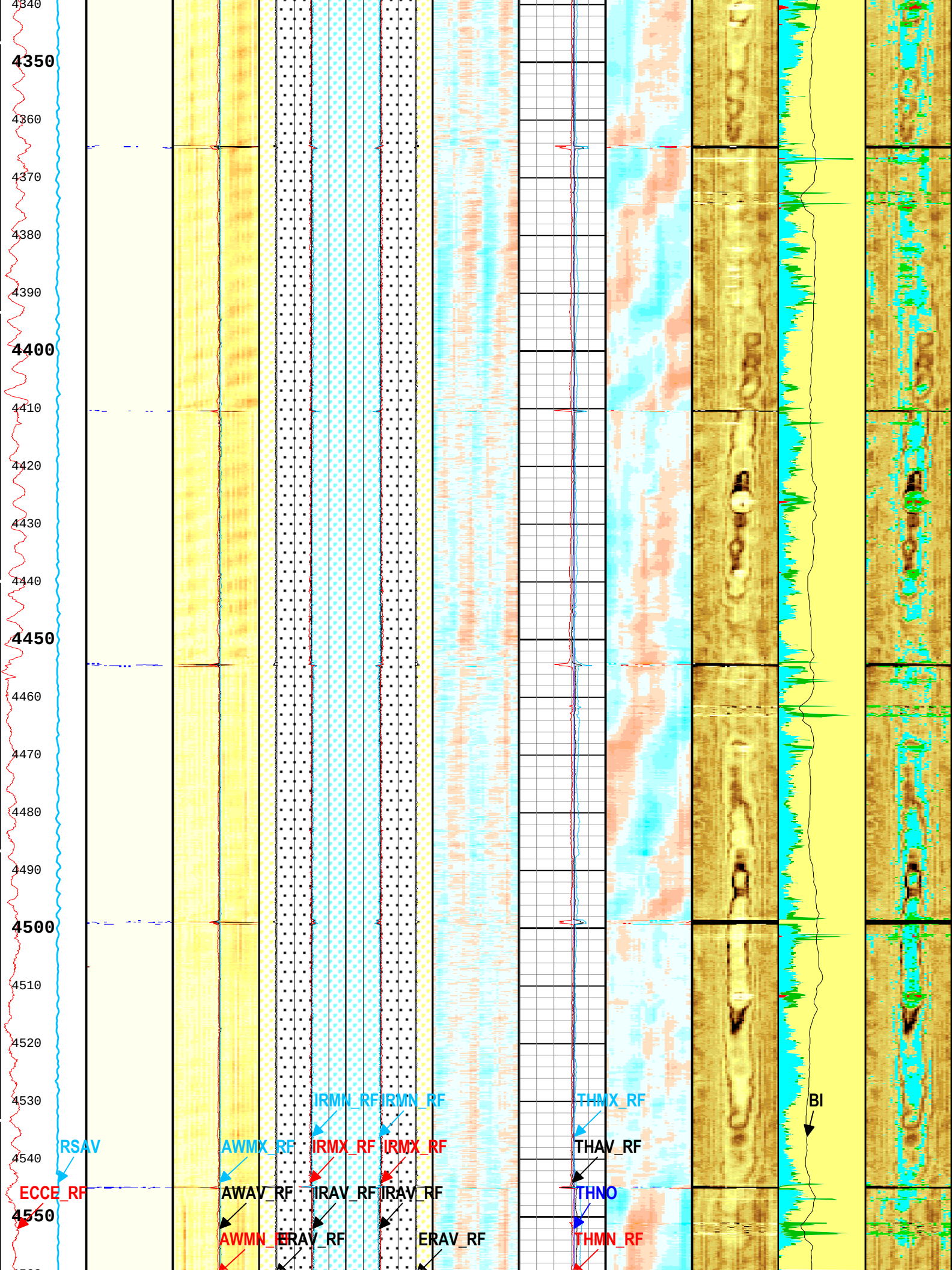

3240
3250
3260
3270
3280
3290
3300
3310
3320
3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

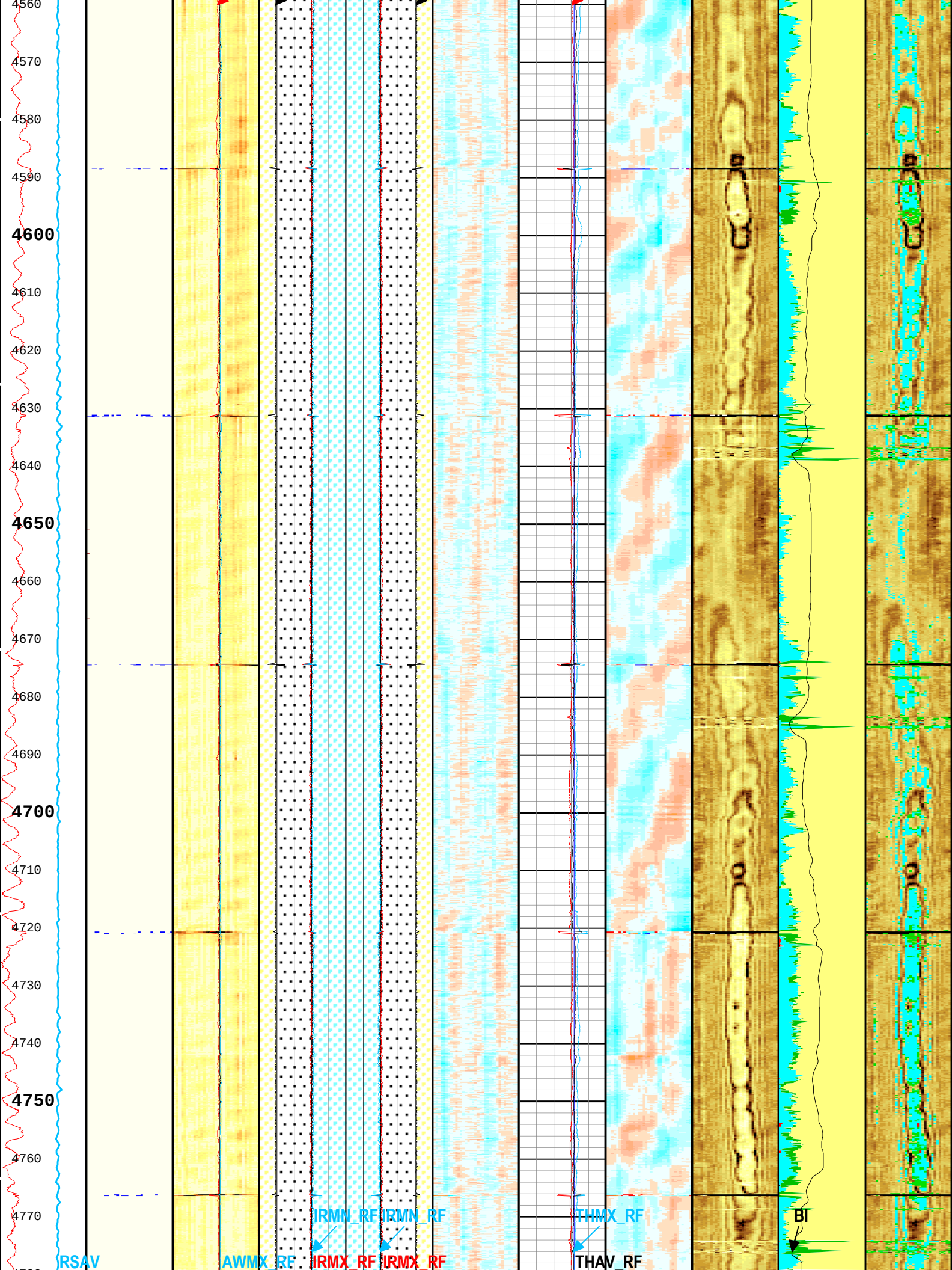

3460
3470
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
3580
3590
3600
3610
3620
3630
3640
3650
3660
3670
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

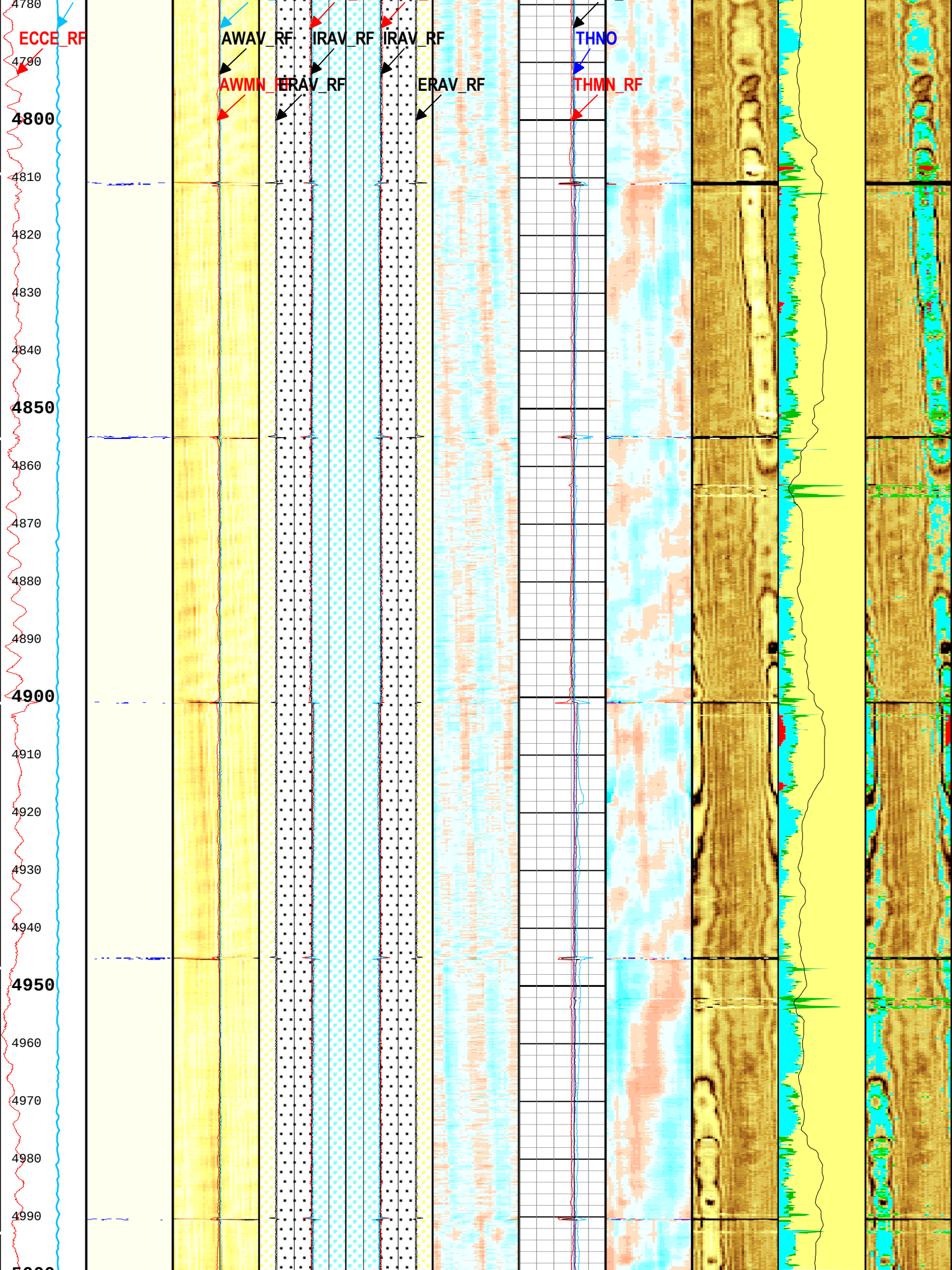

3680
3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
3800
3810
3820
3830
3840
3850
3860
3870
3880
3890
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

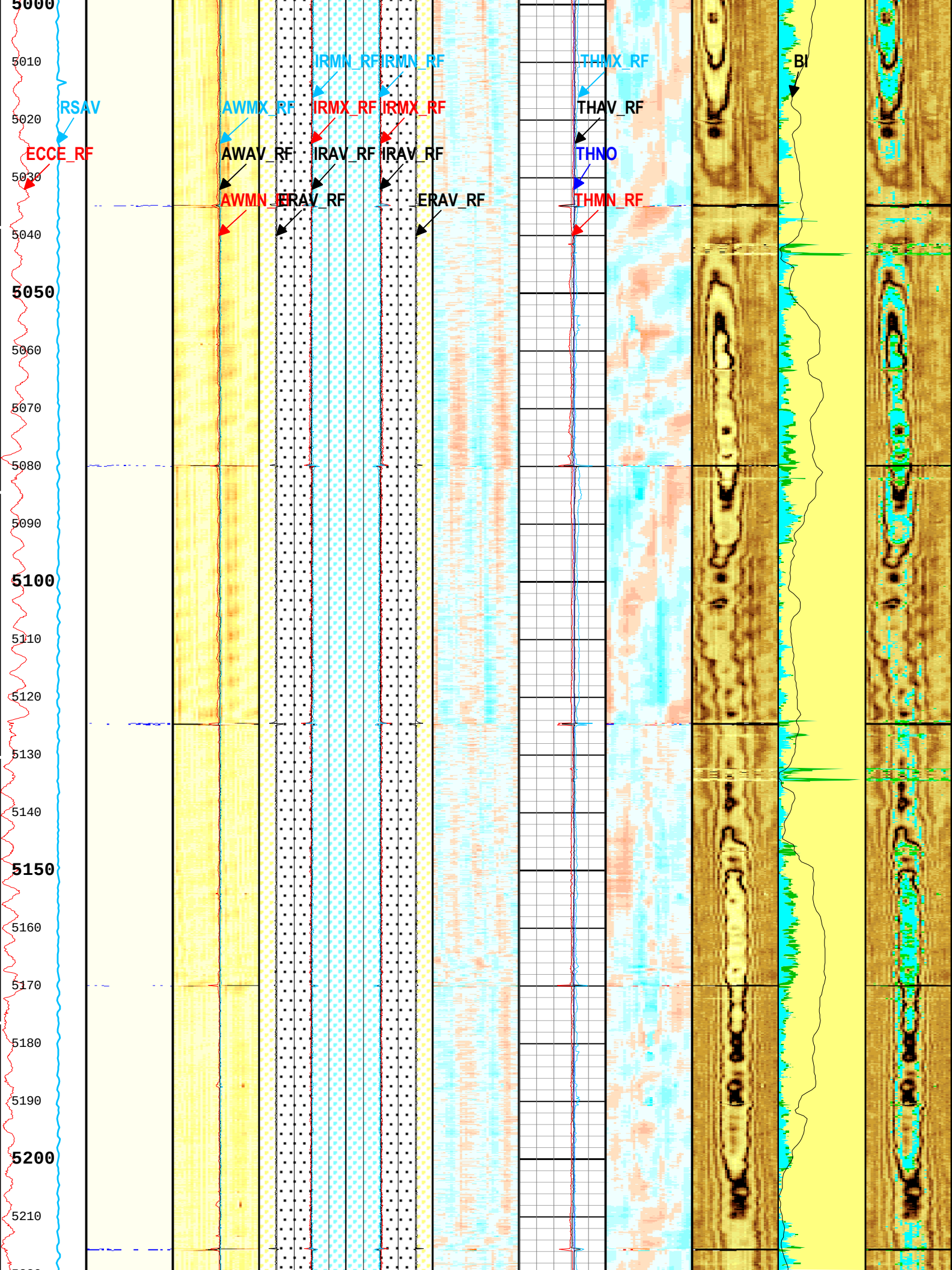

3900
3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
4040
4050
4060
4070
4080
4090
4100
4110
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMN_RF
IRMX_RF
IRMX_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

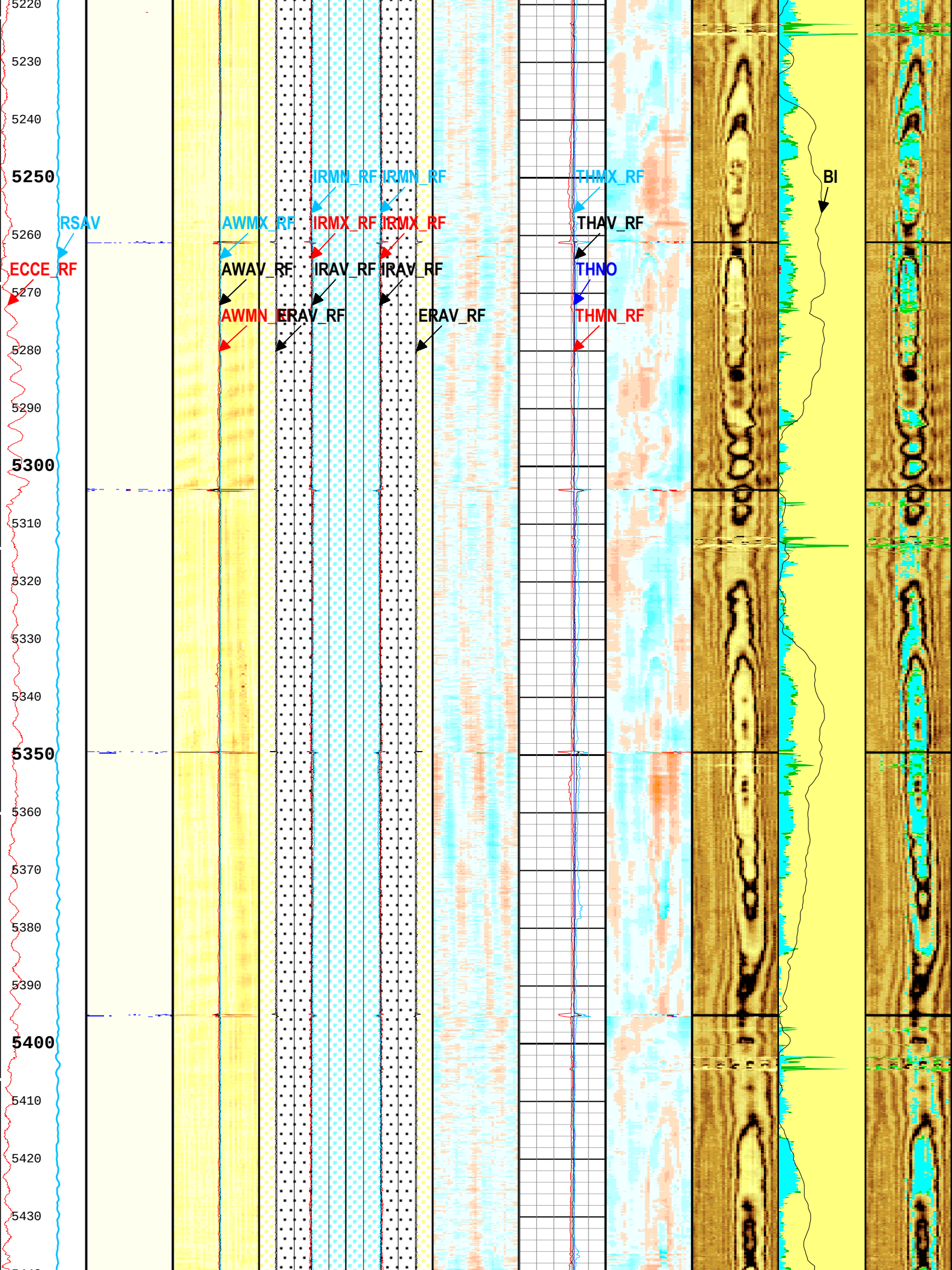

4120
4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
4270
4280
4290
4300
4310
4320
4330
IRSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMN_RF
IRMX_RF
IRMX_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

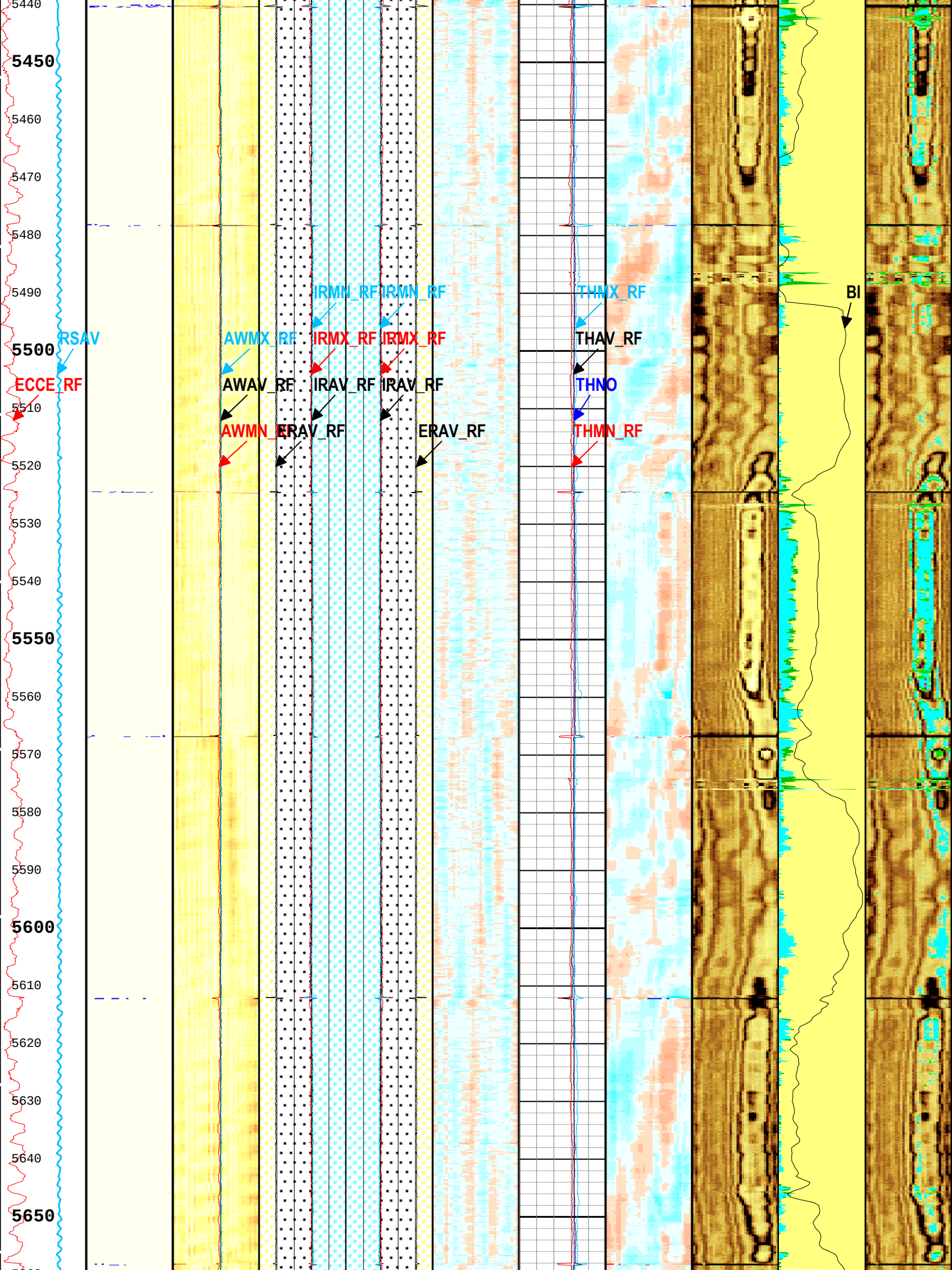

4340
4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
4510
4520
4530
4540
4550
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMN_RF
IRMX_RF
IRMX_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

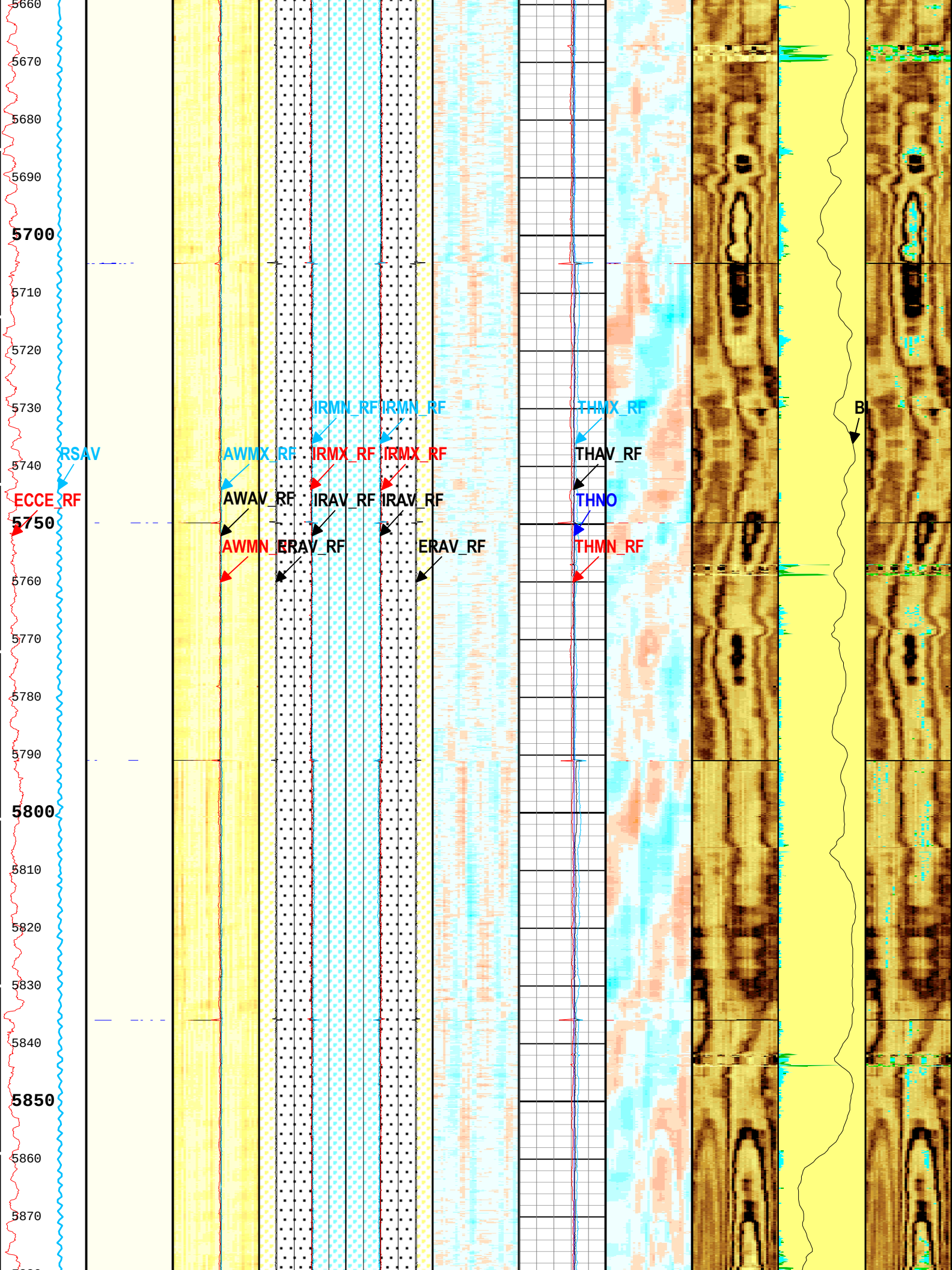

4560
4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
4720
4730
4740
4750
4760
4770
RSAV
AWMX_RF
IRMN_RF
IRMX_RF
IRMN_RF
IRMX_RF
THMX_RF
THAV_RF
BI

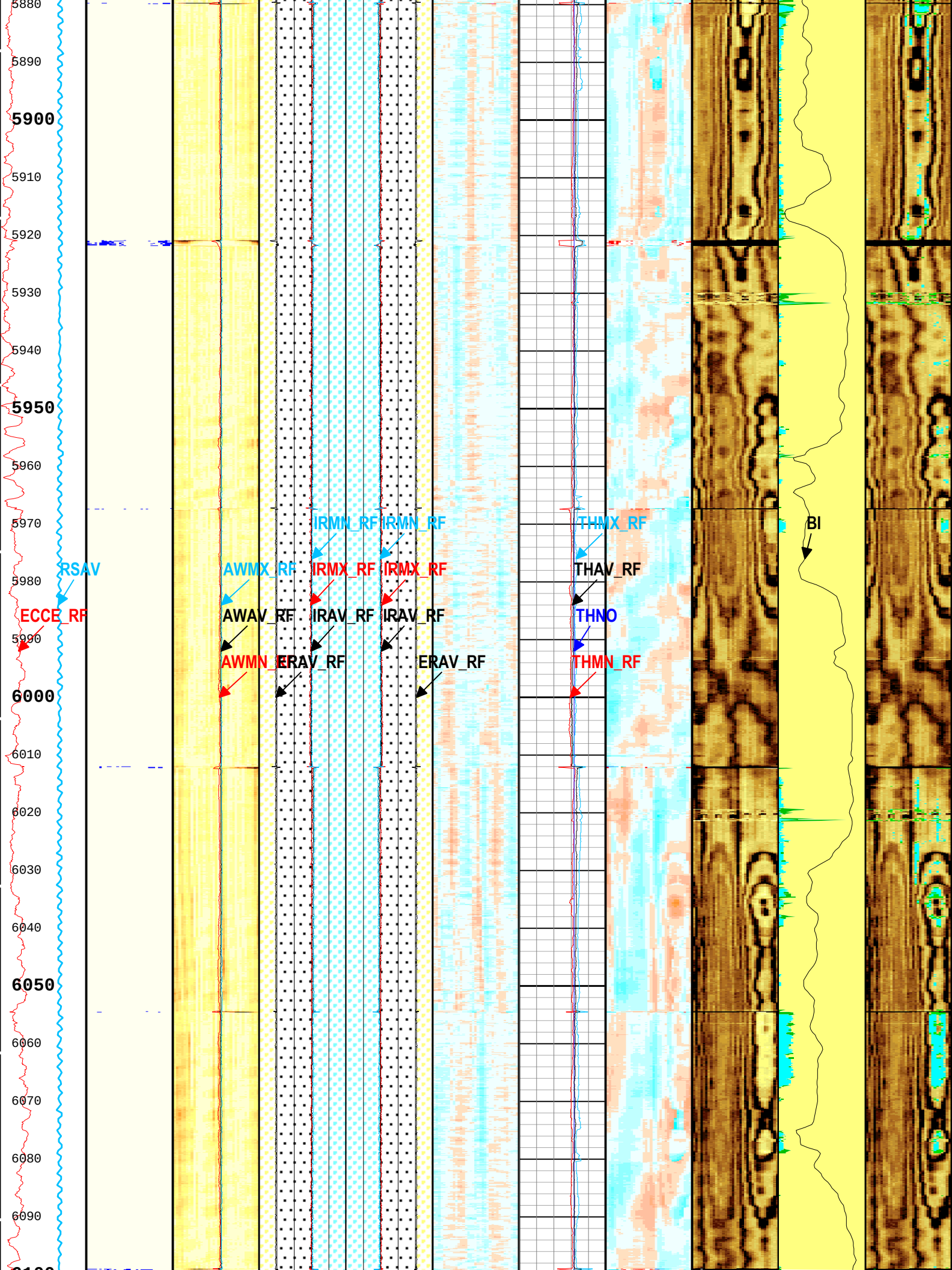

ECCE_RF
AWAV_RF
IRAV_RF
IRAV_RF
THNO
AWMN_RF
ERAV_RF
ERAV_RF
THMN_RF
4780
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930
4940
4950
4960
4970
4980
4990

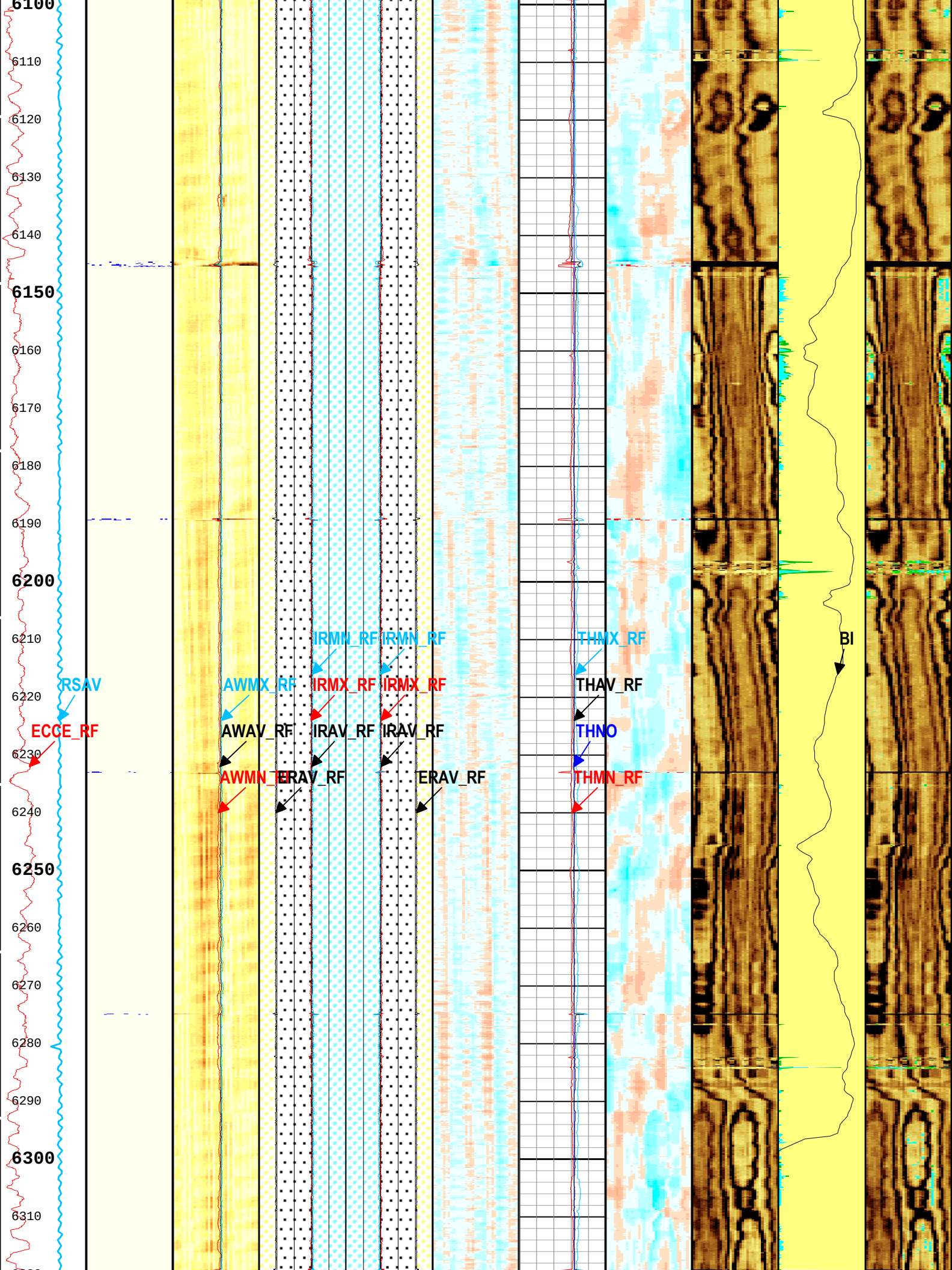

5000
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150
5160
5170
5180
5190
5200
5210
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

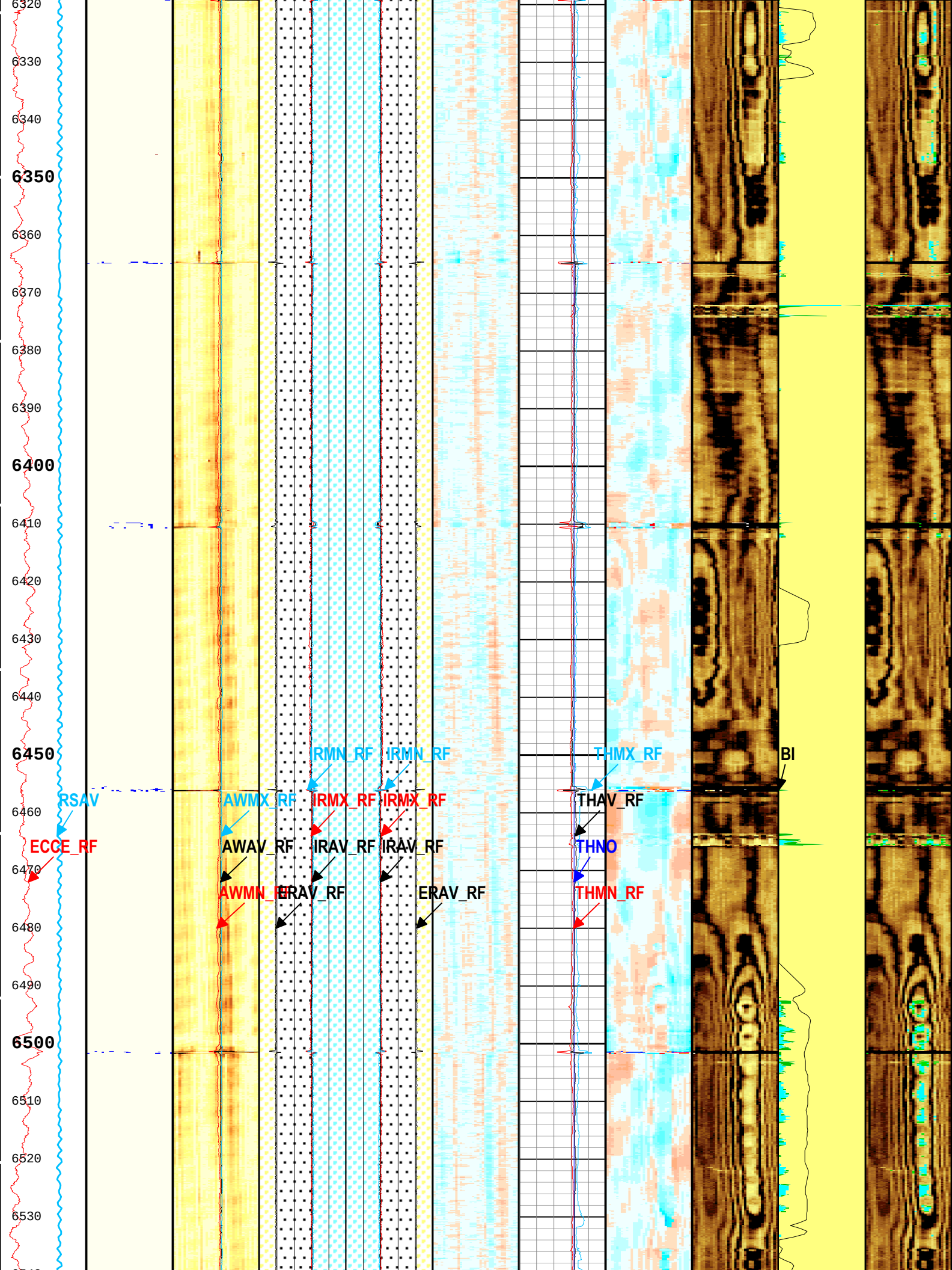

5220
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370
5380
5390
5400
5410
5420
5430
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

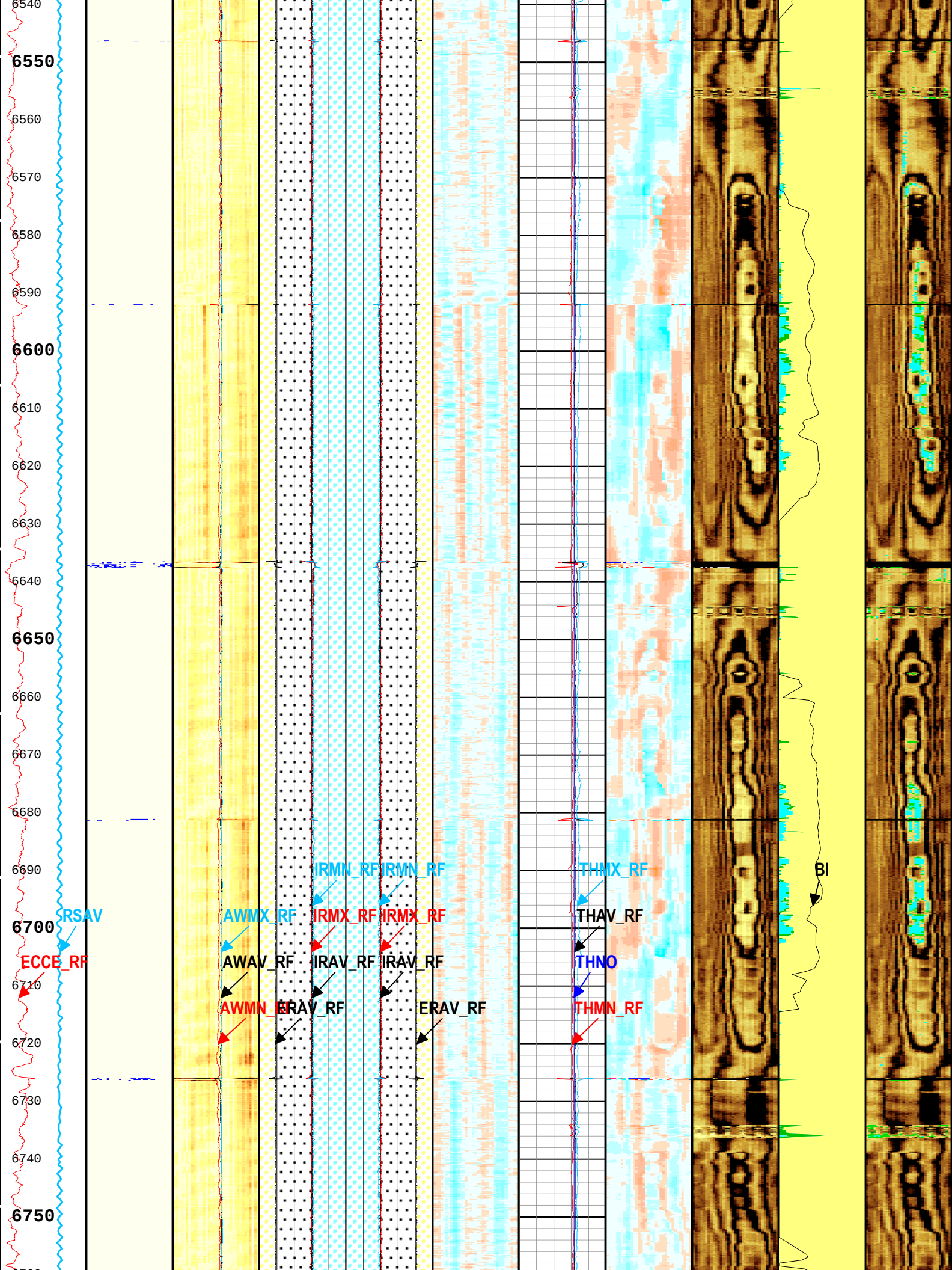

5440
5450
5460
5470
5480
5490
5500
5510
5520
5530
5540
5550
5560
5570
5580
5590
5600
5610
5620
5630
5640
5650
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI

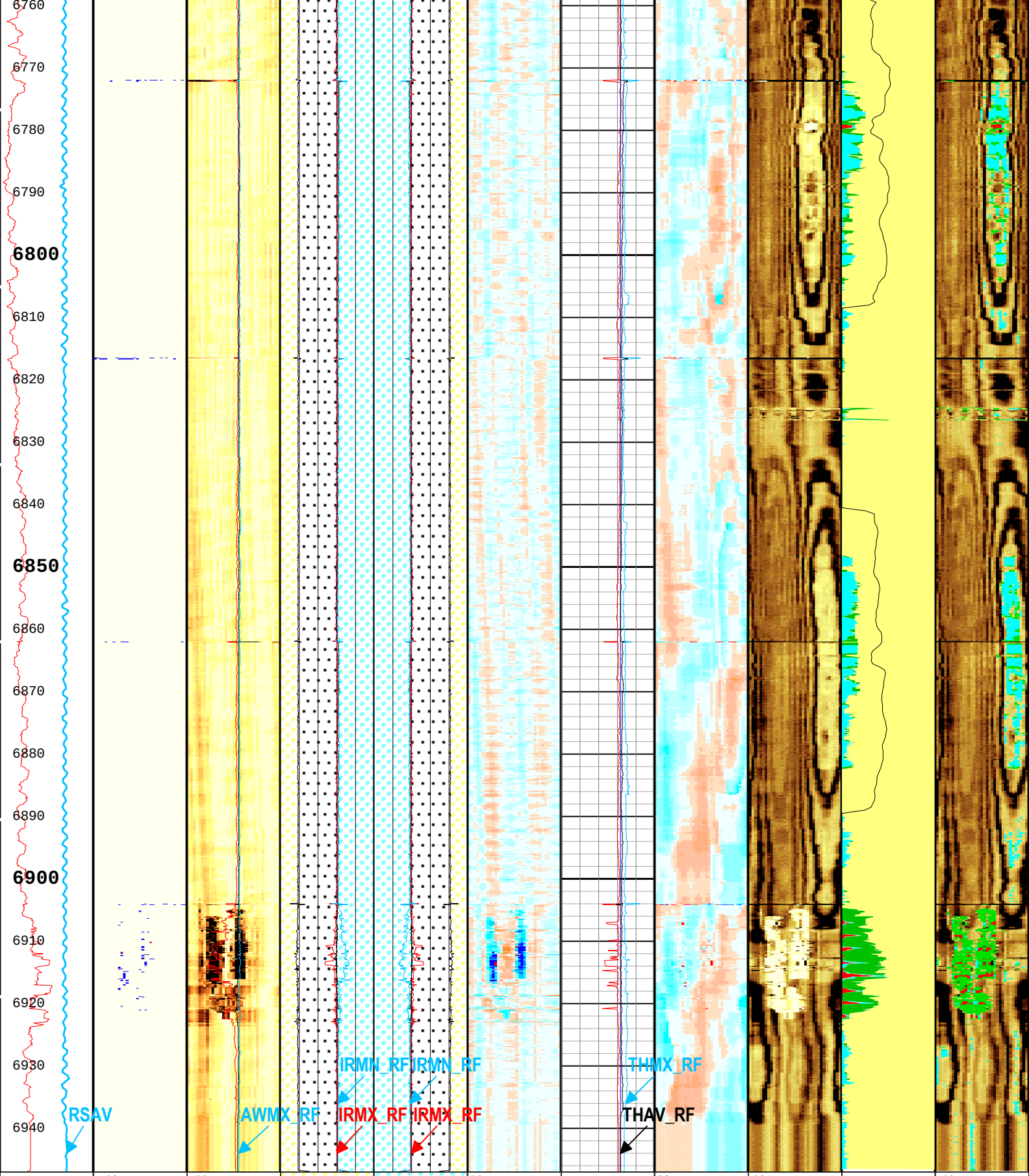

5660
5670
5680
5690
5700
5710
5720
5730
5740
5750
5760
5770
5780
5790
5800
5810
5820
5830
5840
5850
5860
5870
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
B


5880
5890
5900
5910
5920
5930
5940
5950
5960
5970
5980
5990
6000
6010
6020
6030
6040
6050
6060
6070
6080
6090
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI


6100
6110
6120
6130
6140
6150
6160
6170
6180
6190
6200
6210
6220
6230
6240
6250
6260
6270
6280
6290
6300
6310
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI


6320
6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
6440
6450
6460
6470
6480
6490
6500
6510
6520
6530
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI


6540
6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
6670
6680
6690
6700
6710
6720
6730
6740
6750
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI



Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]	Explicit Normalization USIT - USIT Processing Flags (UFLG) USIT-E[1]	Explicit Normalization USIT - Amplitude of Unflagged Wave	ERAV-IRAV / IRAV Median of Unflagged	ERAV / IRAV-ERAV Median of Unflagged	Explicit Normalization USIT - Unflagged Internal Radii minus	Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E[1]	Explicit Normalization USIT - Unflagged Casing Thickness	Custom Normalization USIT - Acoustic Impedance (AIBK)	Ratio of Cement Measurements to Total (CEMR) USIT-E[1]	Custom Normalization USIT - Acoustic Impedance (AIBK)
0 in 0.5	Absent 1.500 3.500	Absent -4.799 -2.799 -0.800	ERAV / IRAV	ERAV / IRAV-ERAV	Absent -0.051 -0.012 0.028 0.068	0.1 in 0.6	Absent -0.051 -0.012 0.028 0.068	Absent 1.500 3.500 5.500 7.500	1 0	Absent 3.090 5.054 7.018
Motor						Nominal			Micro-debon	

Revolution Speed (RSAV) USIT-E[1]
6 c/s 8

USIT Processing Flags (UFLG[0]) USIT-E[1]
1 5

Wave (AWBK_RF) USIT-E[1] (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E[1]
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E[1]
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E[1]
0 dB 75

External Radii (ERAV_RF) USIT-E[1]
3.5 in 2.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
3.5 in 2.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
3.5 in 2.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.5 in 2.5

External Radii (ERAV_RF) USIT-E[1]
2.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
2.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
2.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
2.5 in 3.5

Minimum Median Internal Radius (IRBKM_RF) USIT-E[1] (in)

Casing Thickness (THNO) USIT-E[1]
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E[1]
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E[1]
0.1 in 0.6

Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E[1] (in)

(AIBK) USIT-E[1] (Mrayl)

ding Ratio (MDR) USIT-E[1]
1 0

Ratio of Gas Measurements to Total (GASR) USIT-E[1]
1 0

Bonded

Gas

Liquid

Micro-debonding

Bond Index (BI) DSLT-H[1]
1 0

(AIBR) USIT-E[1] (Mrayl)

Absent 2.599 4.563 6.527

Custom Normalization

USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)

USIT Processing Flags (UFLG[0]) USIT-E[1]

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Composite 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jul-2016 09:40:13

Composite 1

Cement Log 2 IN = 100 FT

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[7]:Up	Up	85.65 ft	6947.43 ft	19-Jul-2016 9:27:50 AM	19-Jul-2016 12:13:06 PM	ON	7.00 ft	No
ONE	Log[9]:Up	Up	12.53 ft	336.93 ft	19-Jul-2016 1:55:07 PM	19-Jul-2016 2:07:42 PM	ON	17.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:FF-32F (IW 62)

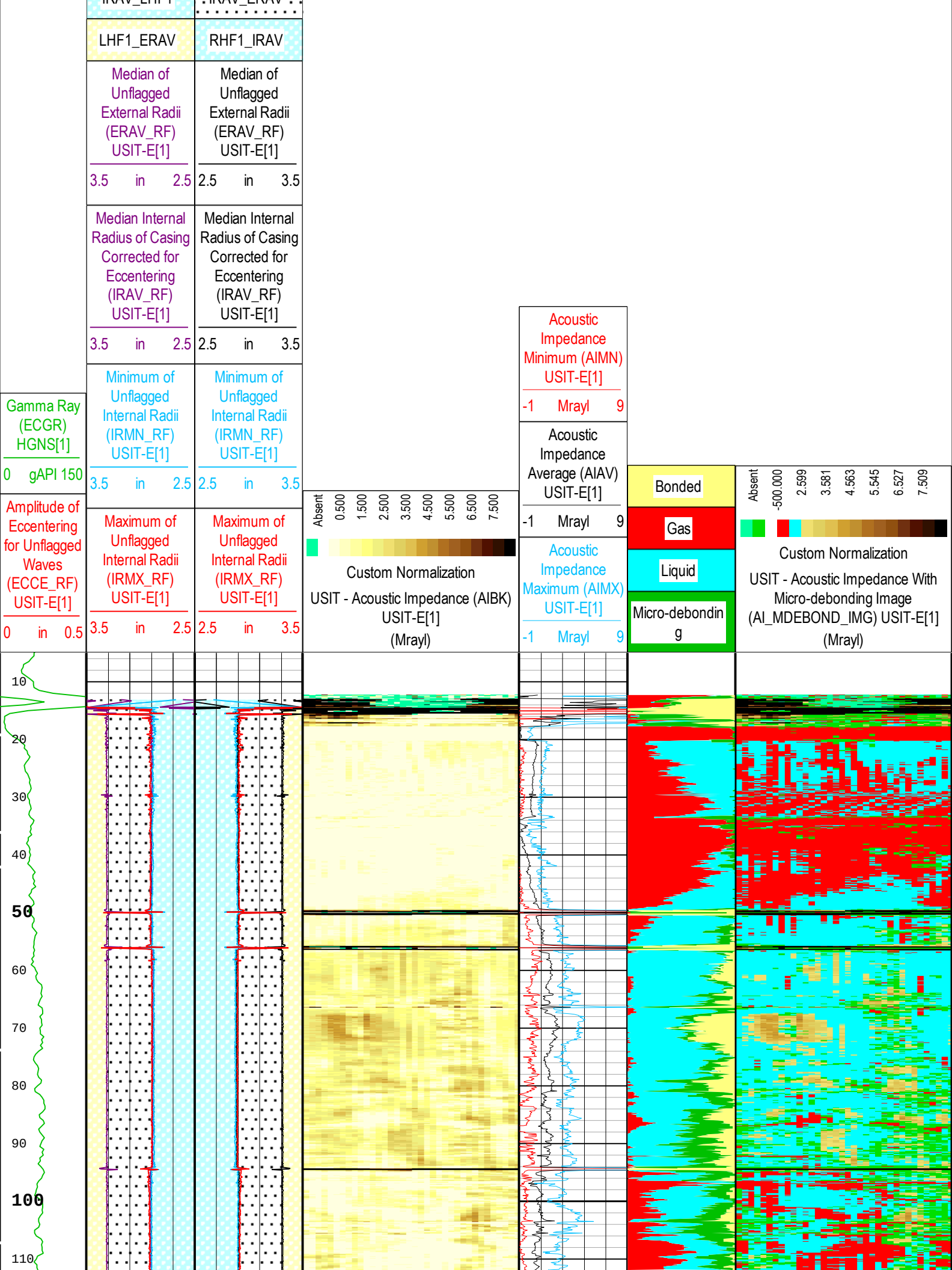
Composite 1:S006

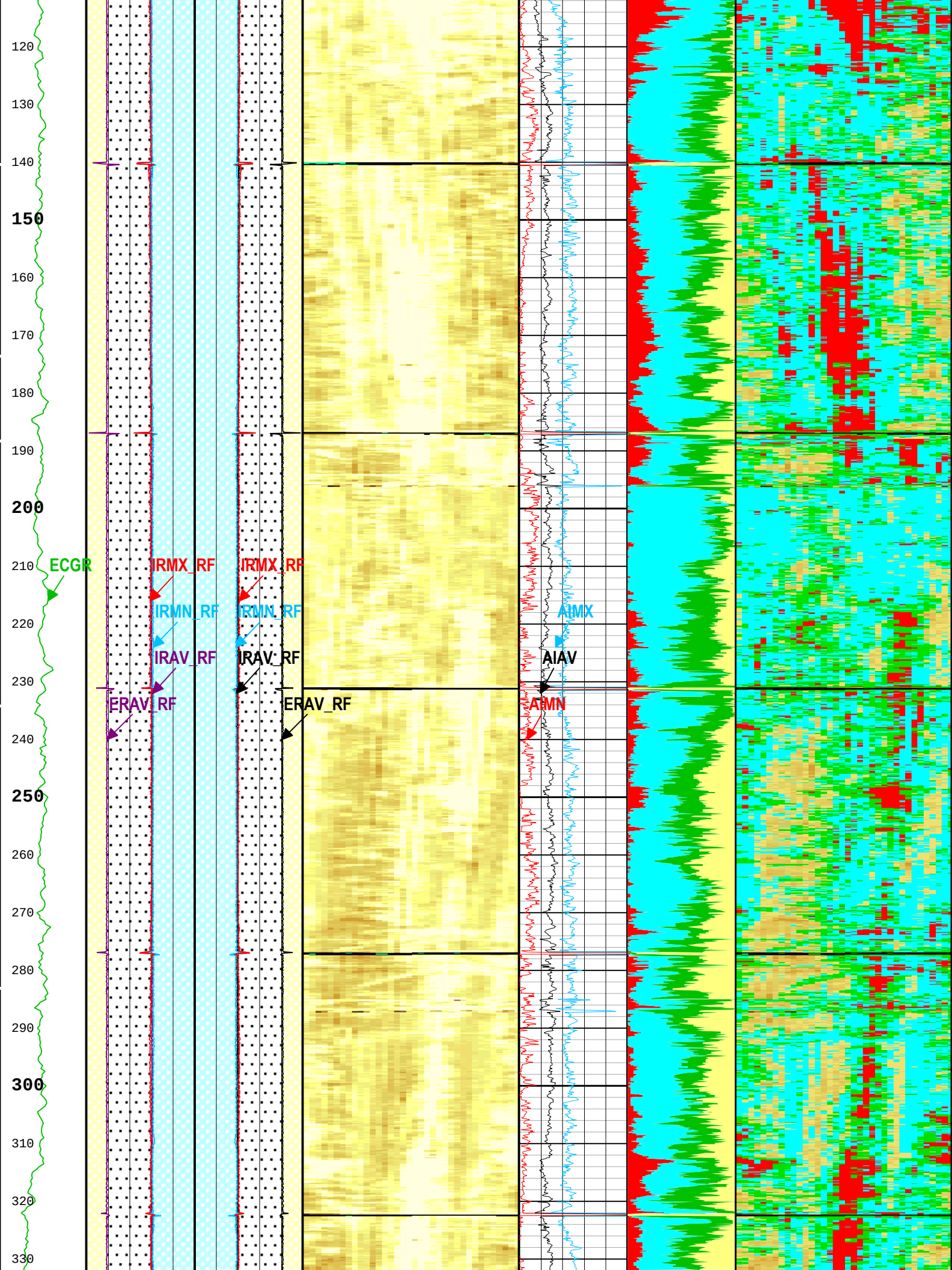
Description: USI Cement Format: Log (LBV1_USI Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jul-2016 09:41:04

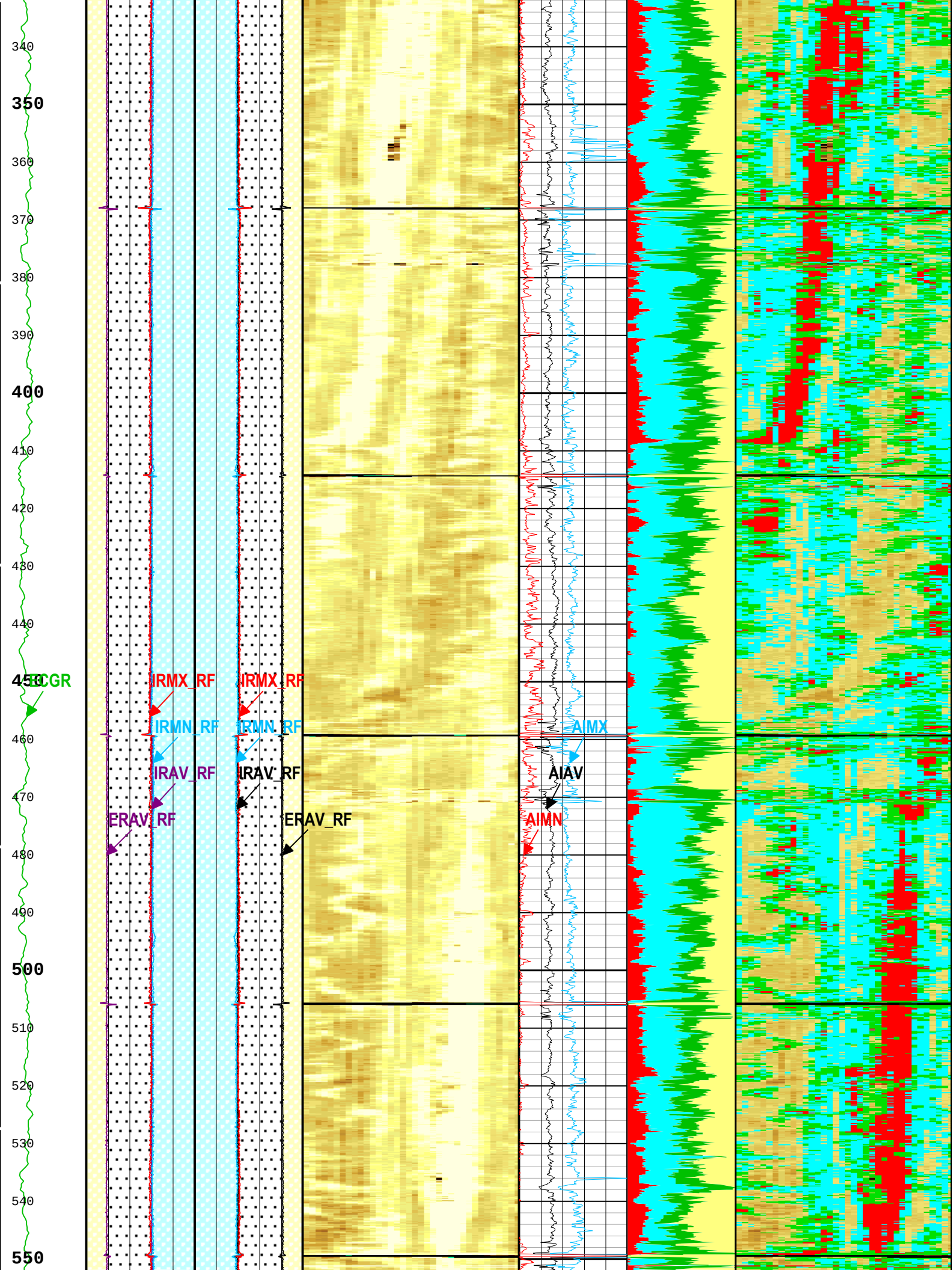
TIME_1900 - Time Marked every 60.00 (s)

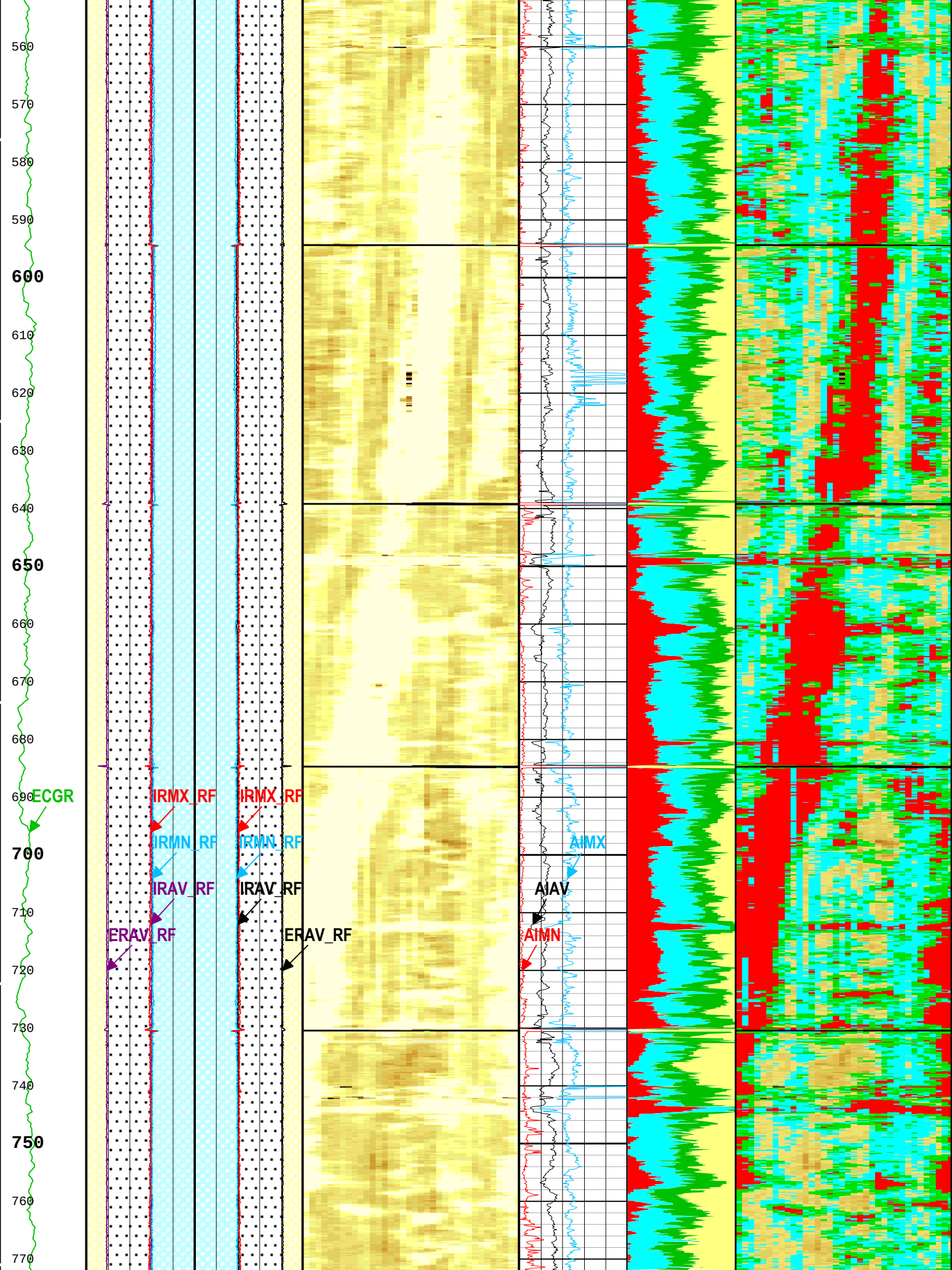
ERAV_IRAV | ERAV_RHF1

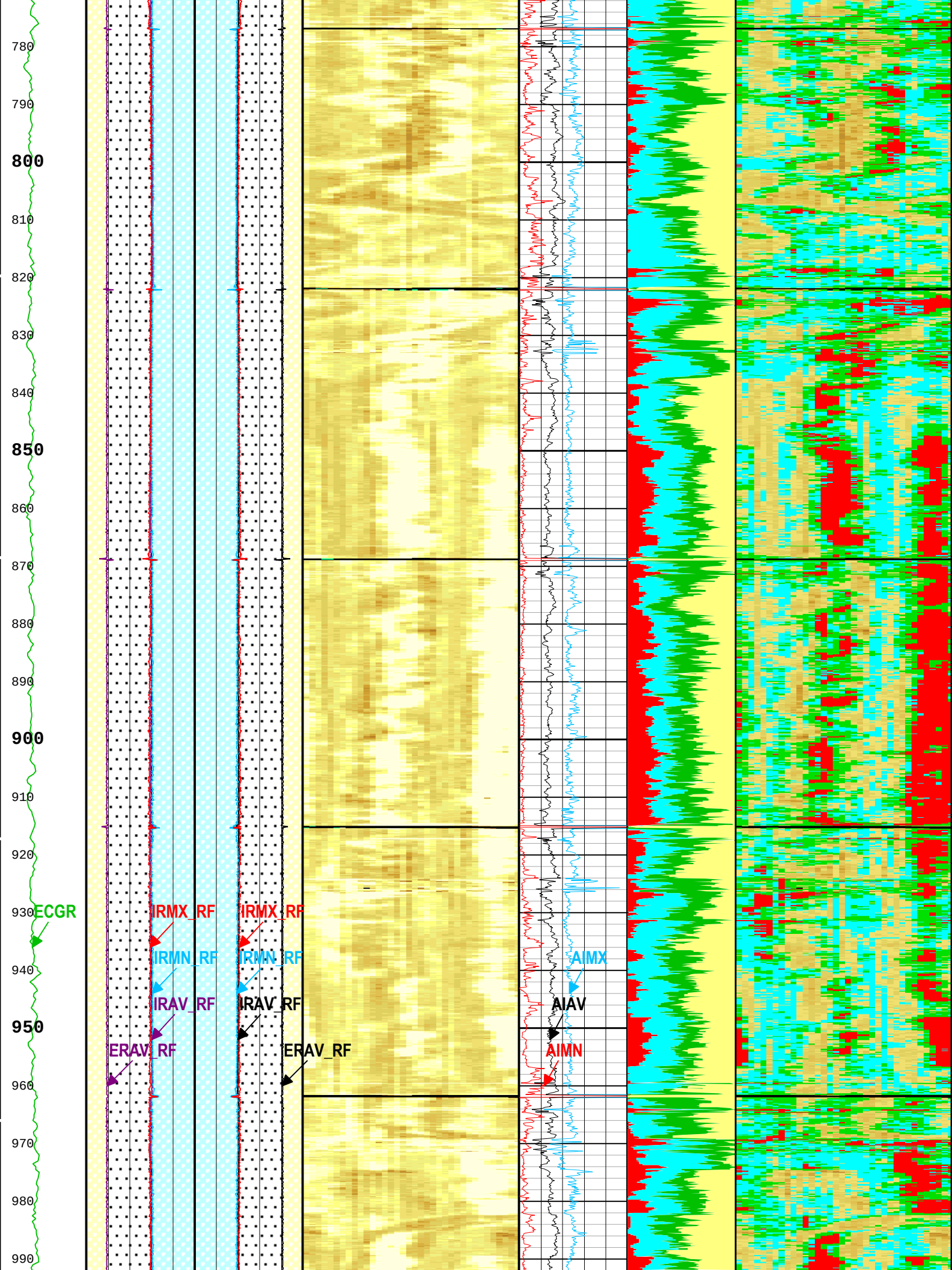
IRAV_LHF1 | IRAV_ERAV

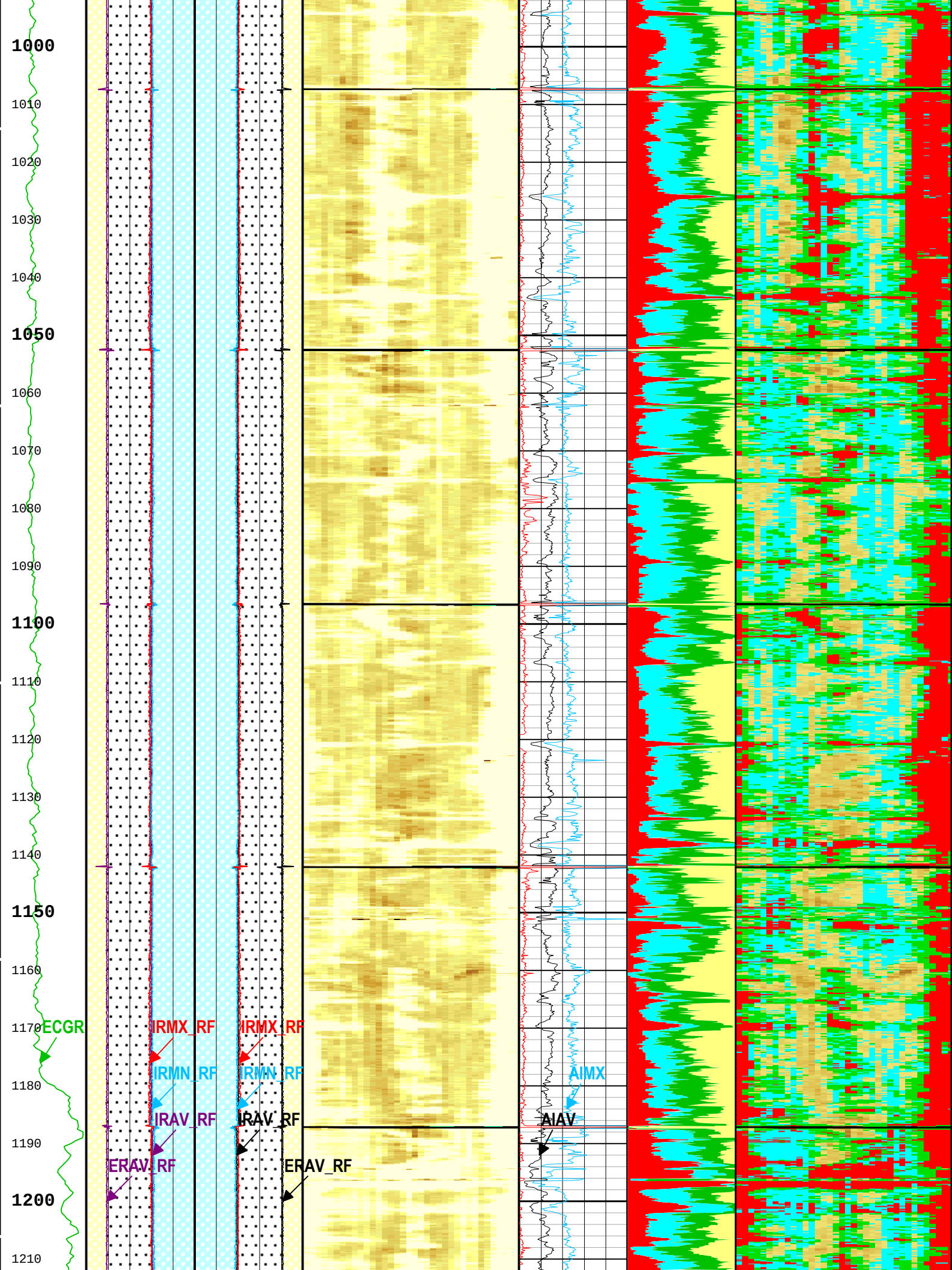

LHF1_ERAV
RHF1_IRAV
Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
3.5 in 2.5
2.5 in 3.5
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
3.5 in 2.5
2.5 in 3.5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.5 in 2.5
2.5 in 3.5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
3.5 in 2.5
2.5 in 3.5
Gamma Ray (ECGR) HGNS[1]
0 gAPI 150
Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5
Absent 0.500 1.500 2.500 3.500 4.500 5.500 6.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Acoustic Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9
Acoustic Impedance Average (AIAV) USIT-E[1]
-1 Mrayl 9
Acoustic Impedance Maximum (AIMX) USIT-E[1]
-1 Mrayl 9
Bonded
Gas
Liquid
Micro-debonding
Absent -500.000 2.599 3.581 4.563 5.545 6.527 7.509
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)
10
20
30
40
50
60
70
80
90
100
110

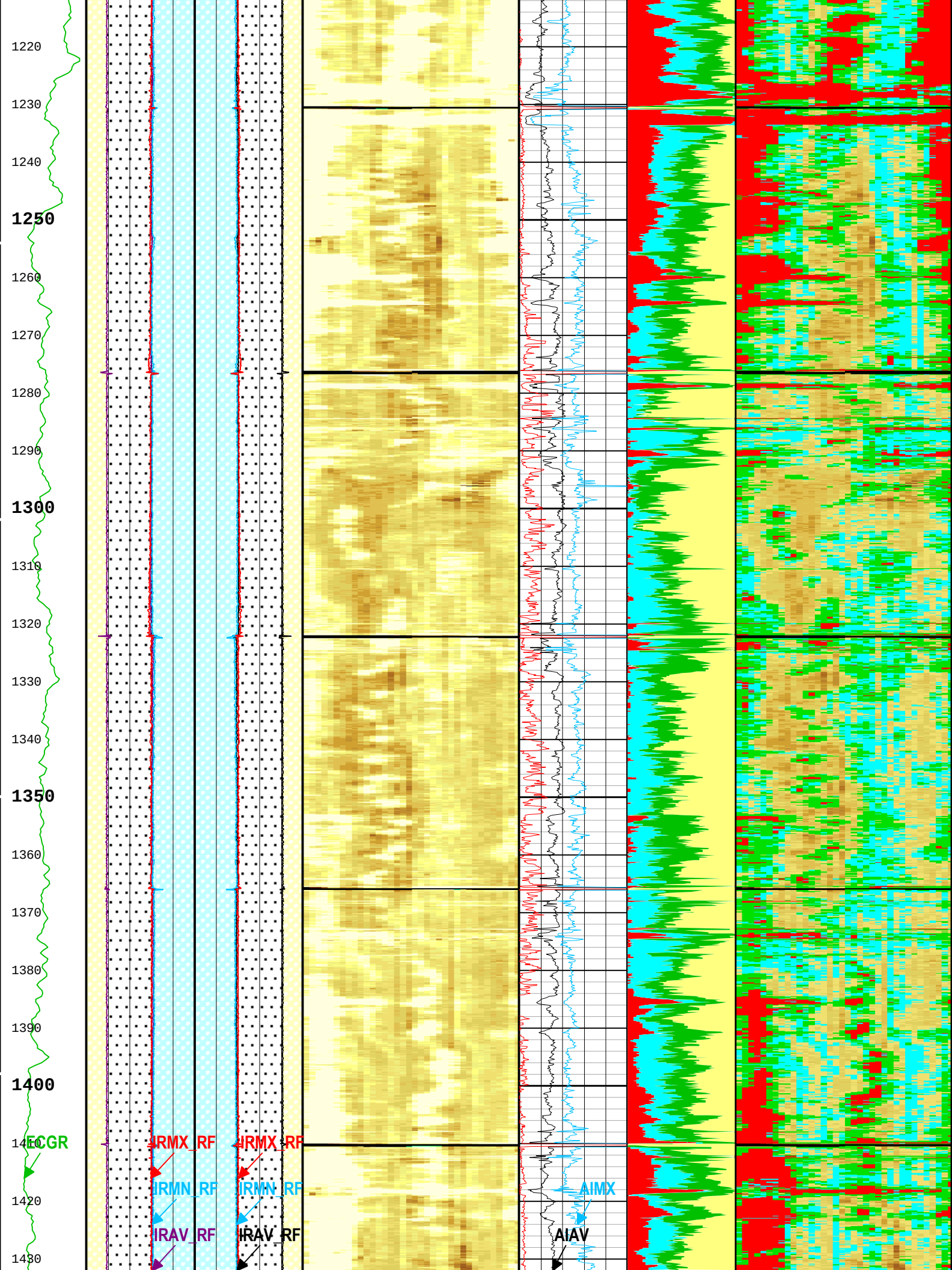

120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

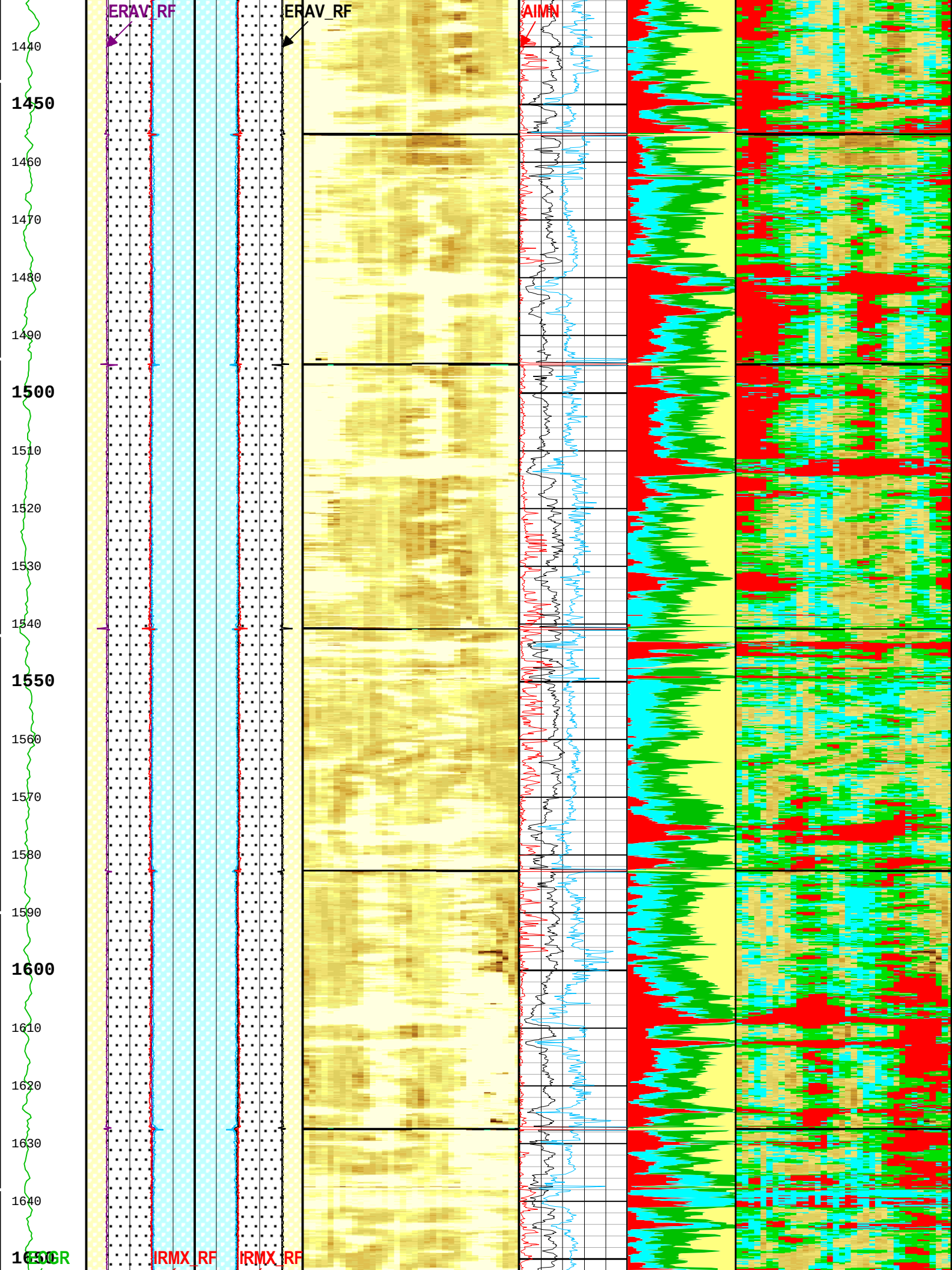

340
350
360
370
380
390
400
410
420
430
440
450
460
470
480
490
500
510
520
530
540
550
CCGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

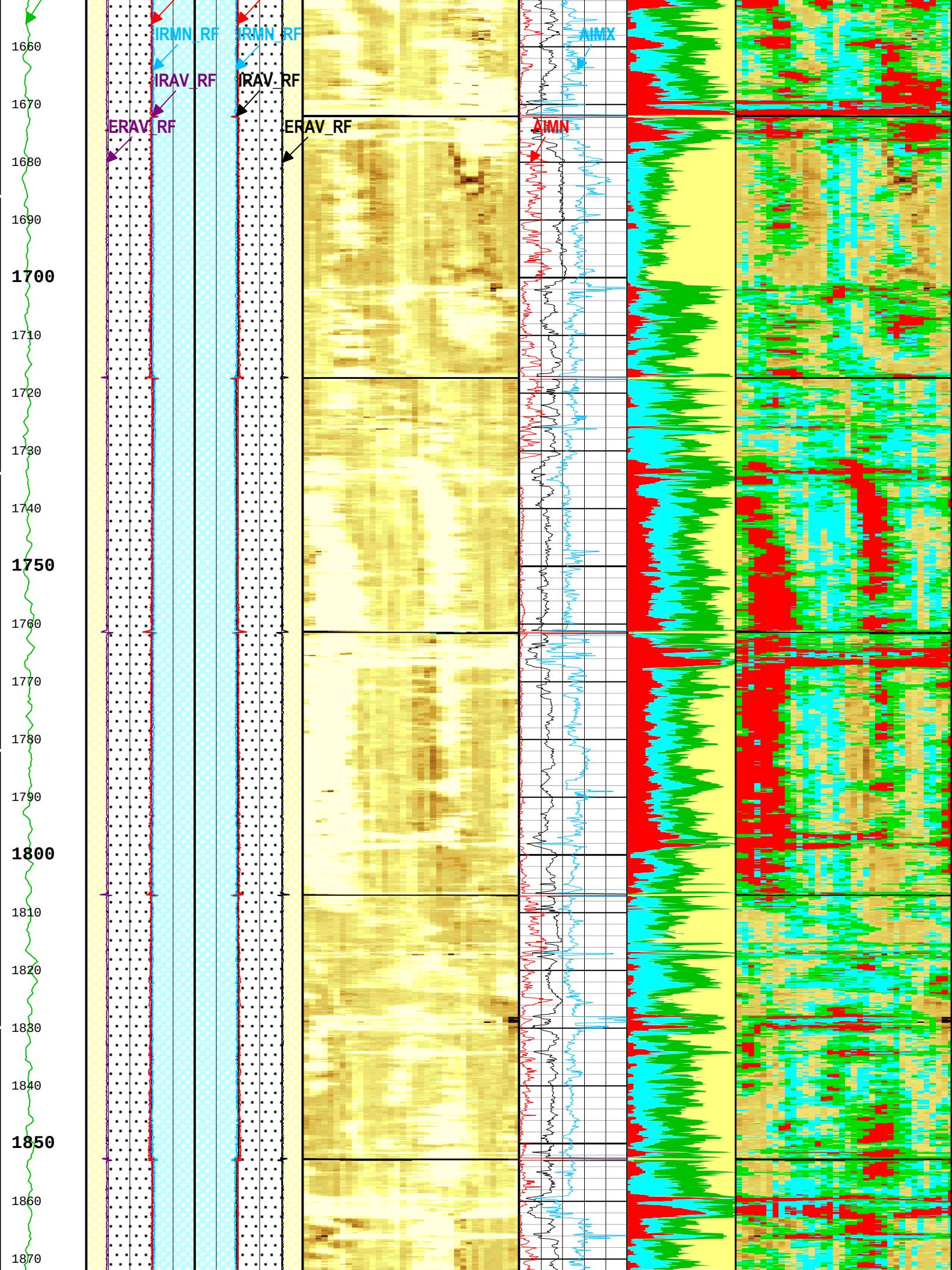

560
570
580
590
600
610
620
630
640
650
660
670
680
690
700
710
720
730
740
750
760
770
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

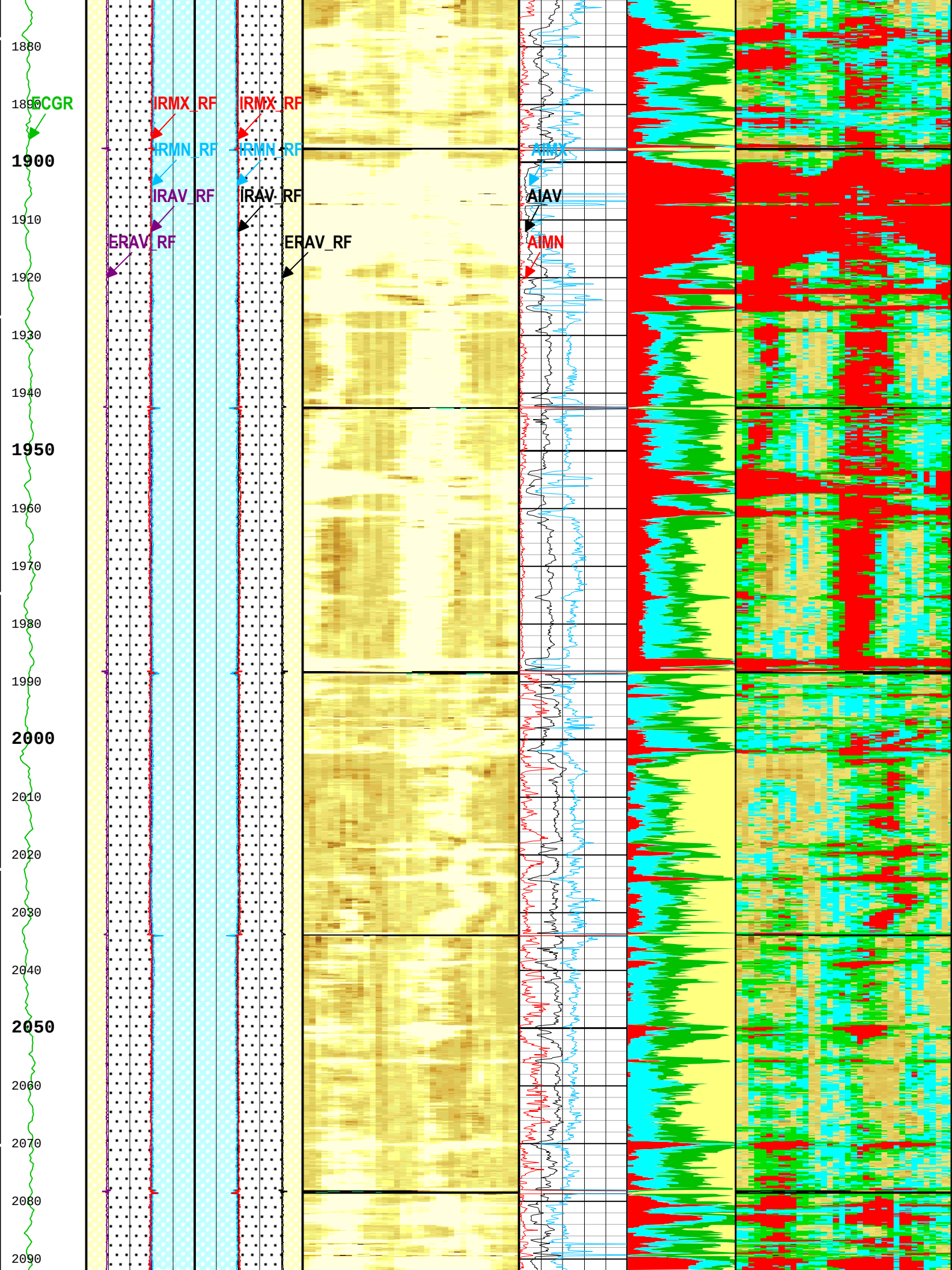

780
790
800
810
820
830
840
850
860
870
880
890
900
910
920
930
940
950
960
970
980
990
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

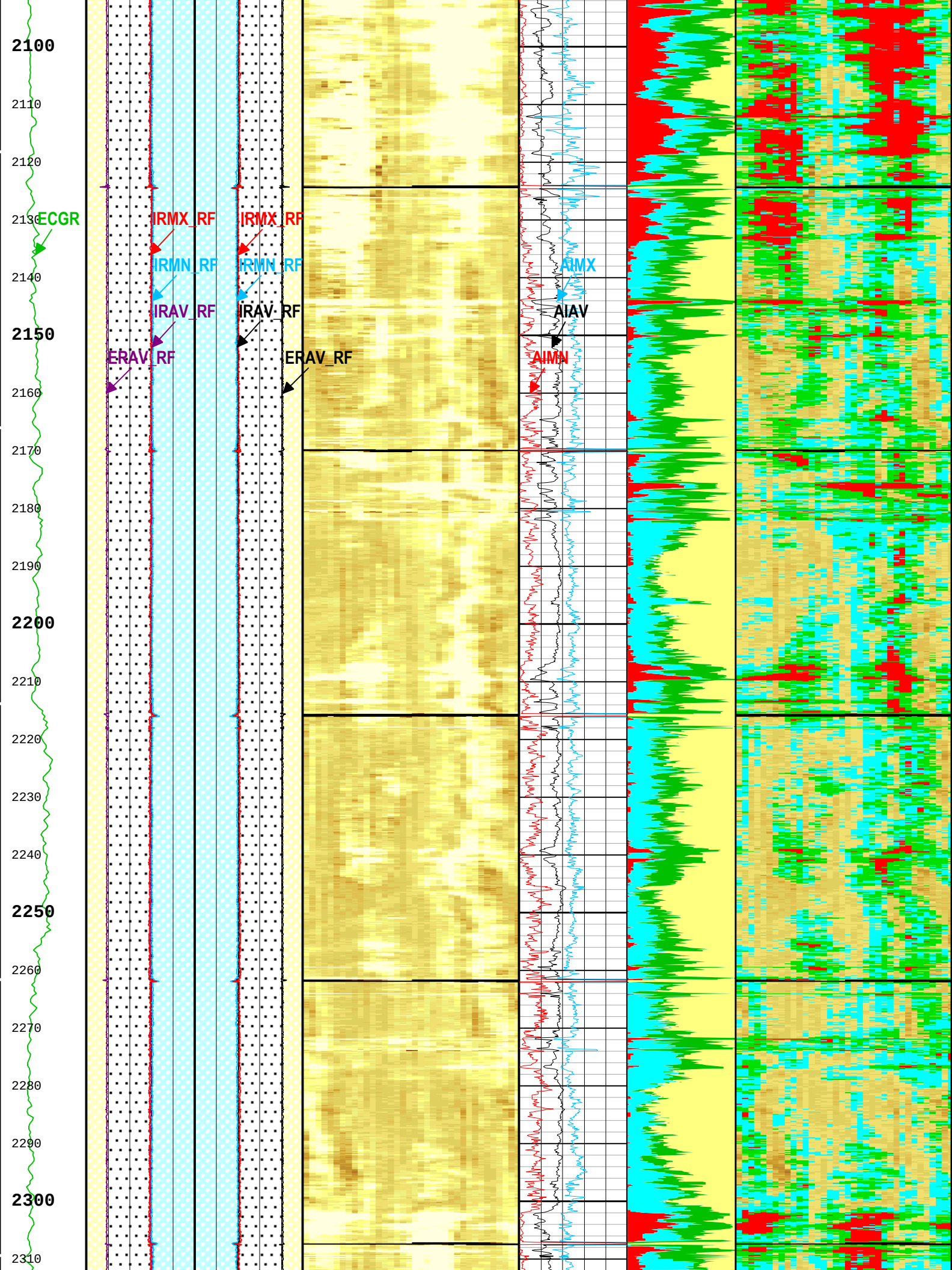

1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
1180
1190
1200
1210
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV

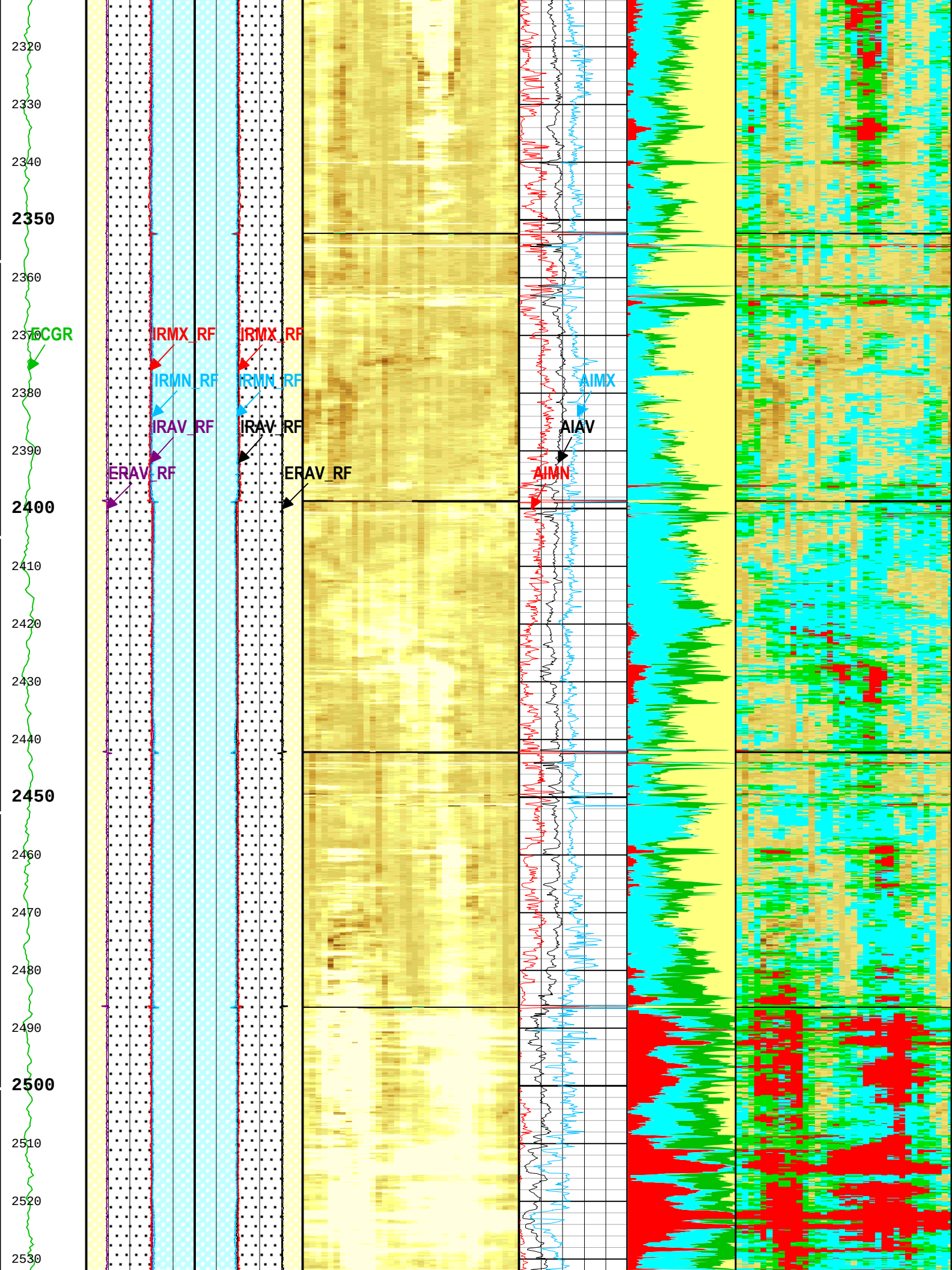

1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410
1420
1430
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
AIMX
AIAV

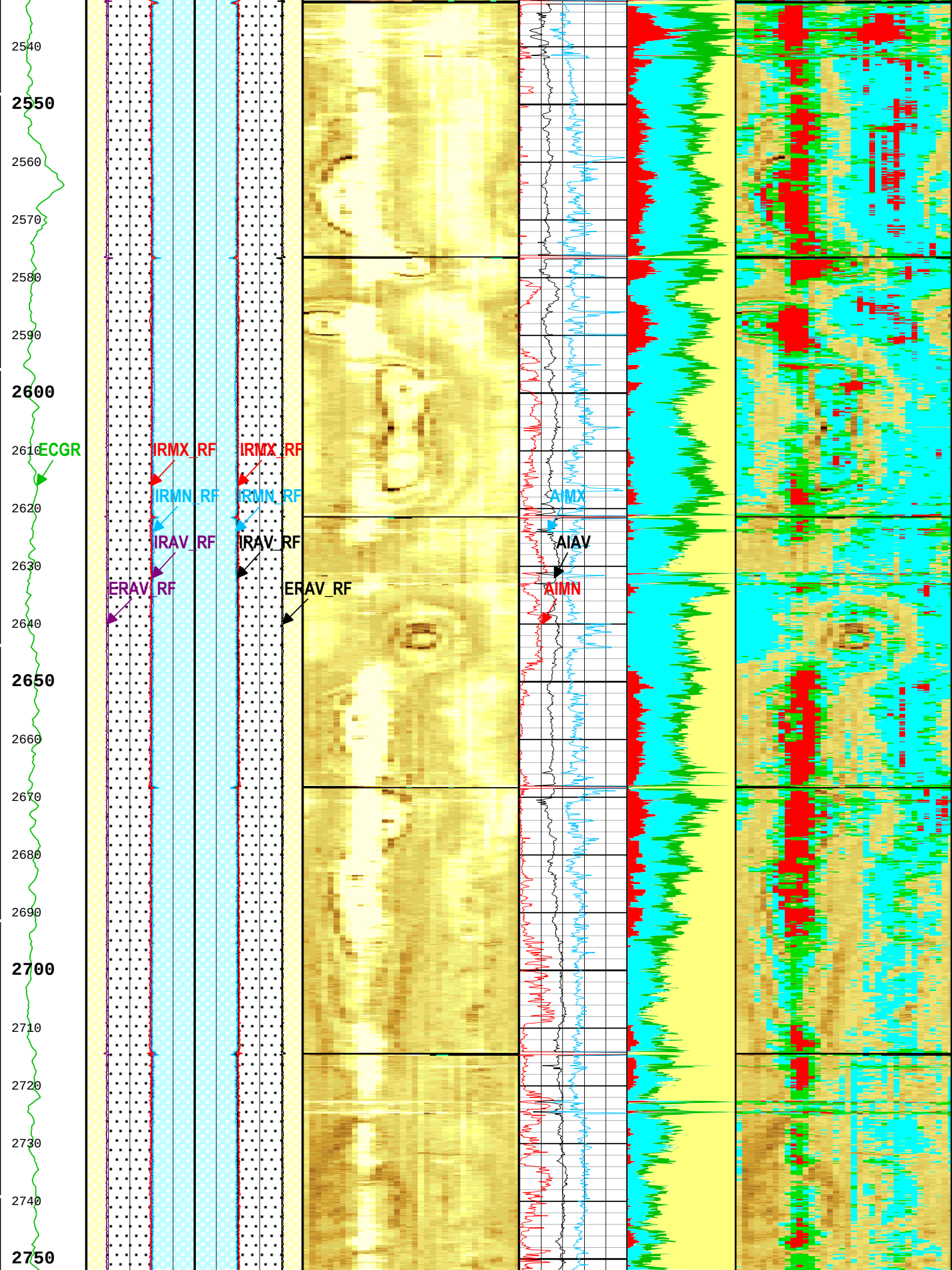

ERAV_RF
ERAV_RF
AIMN
1440
1450
1460
1470
1480
1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
1630
1640
1650
GR
IRMX_RF
IRMX_RF

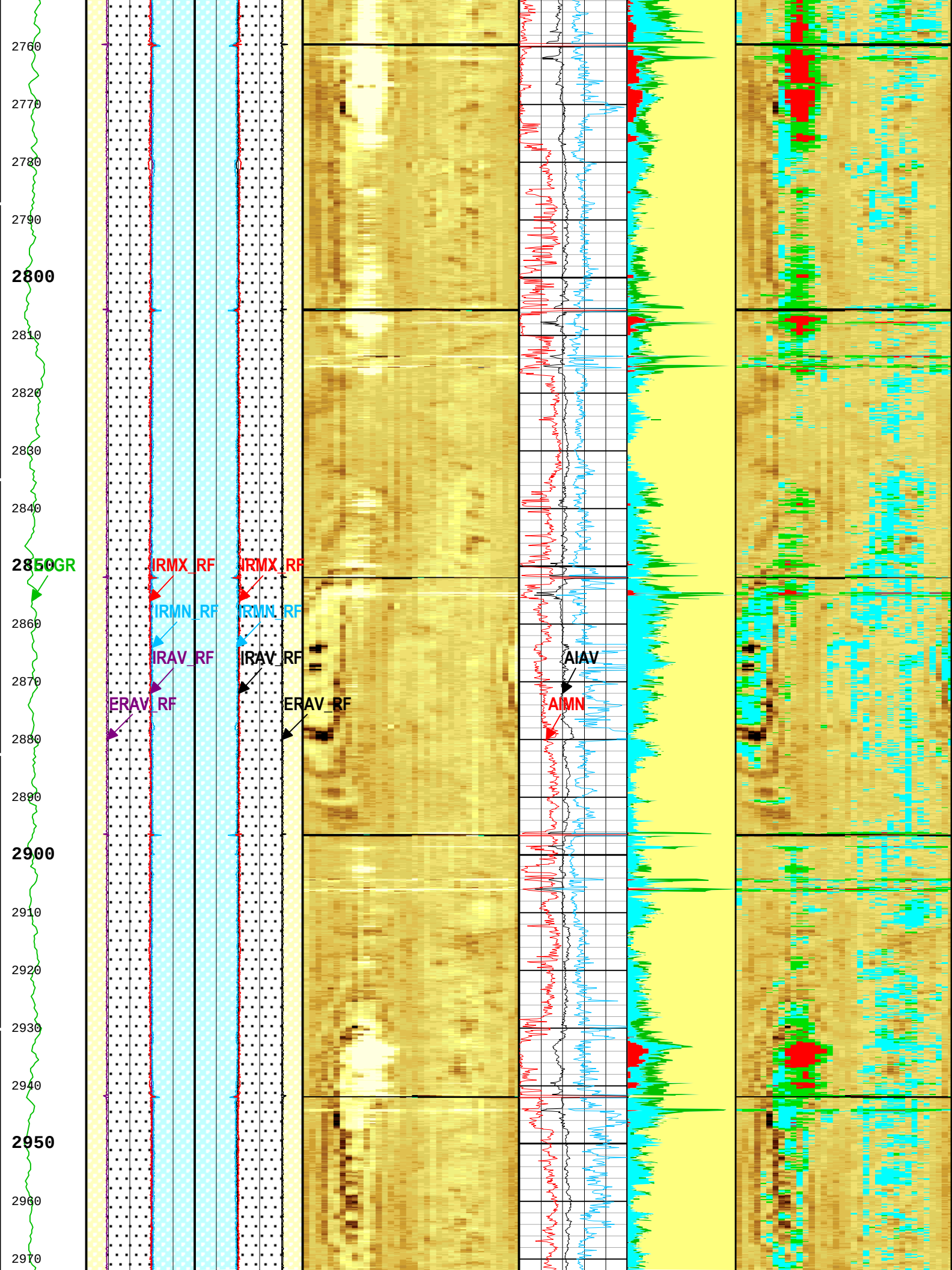

IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIMN
1660
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
1850
1860
1870

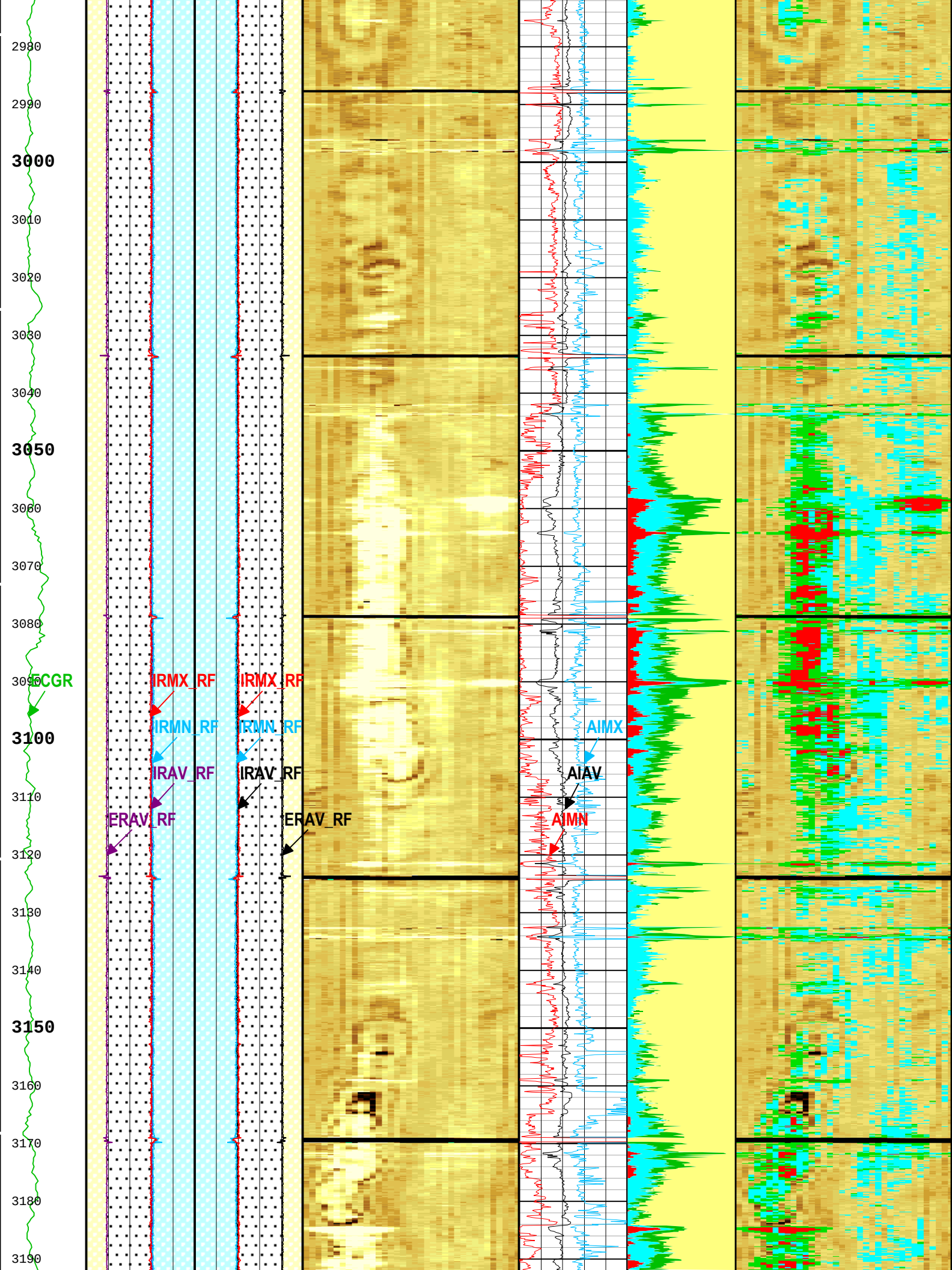

1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

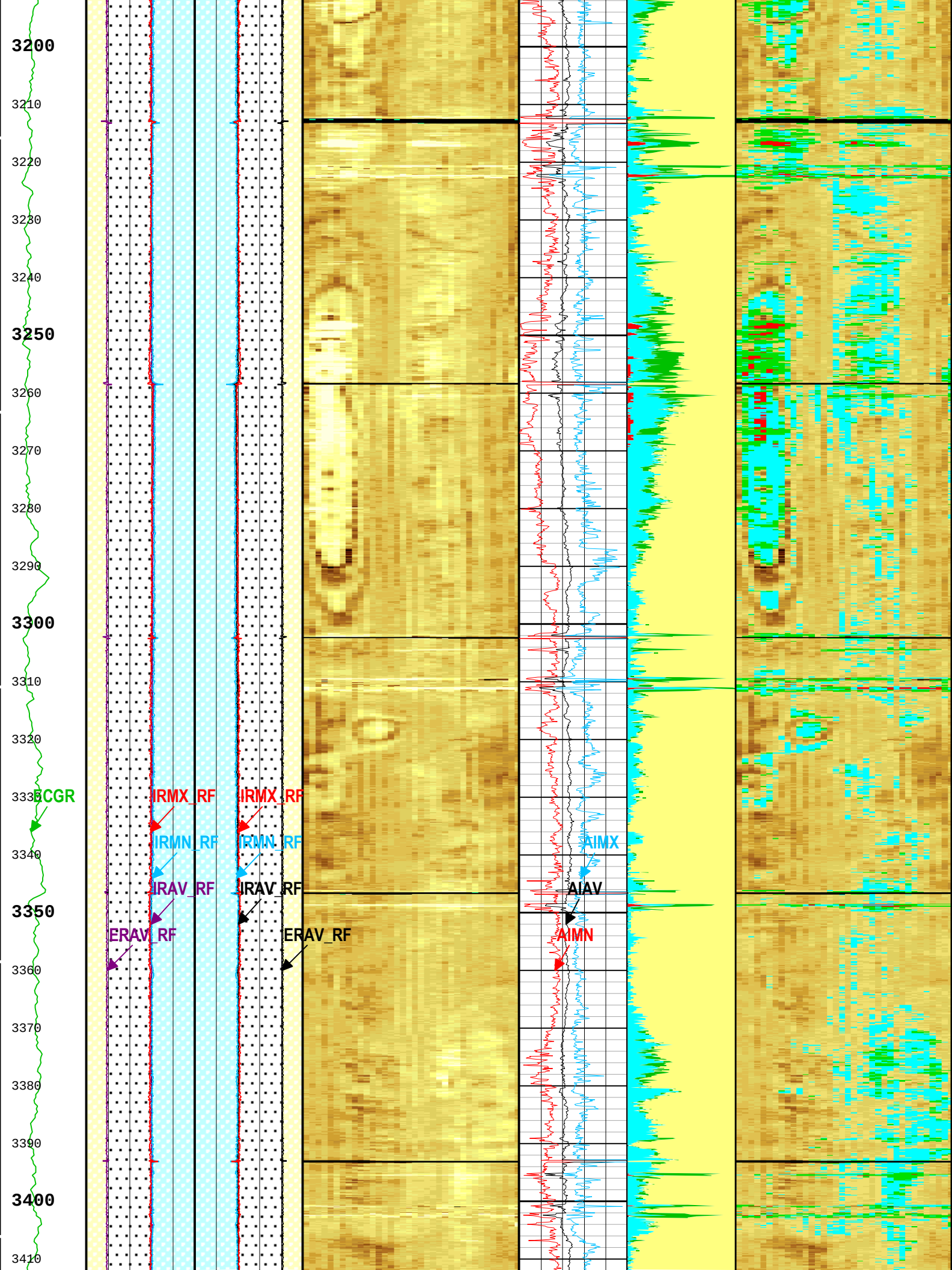

2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
ECGR
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
AIMX
AIAV
AIMN

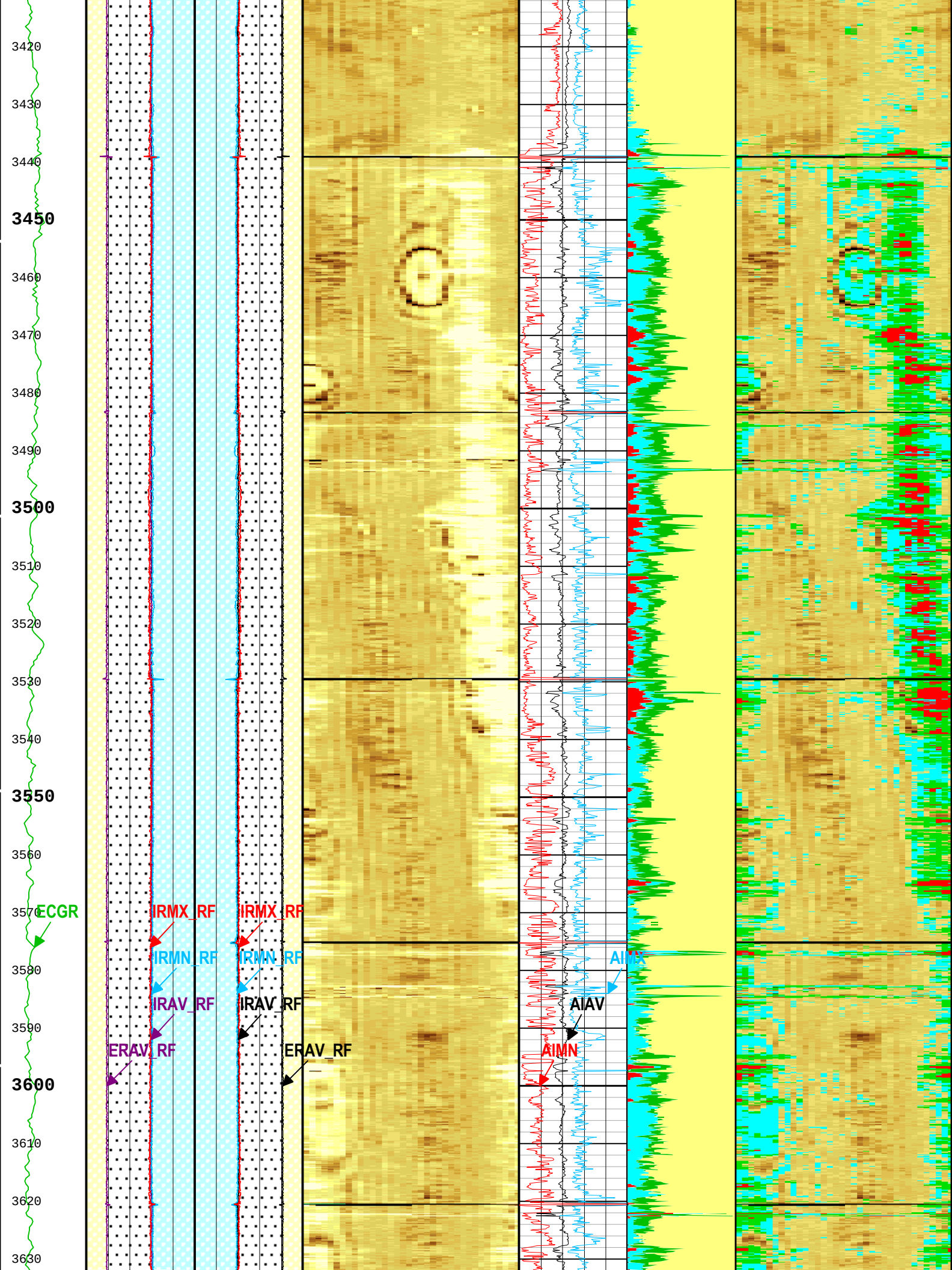

2320
2330
2340
2350
2360
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

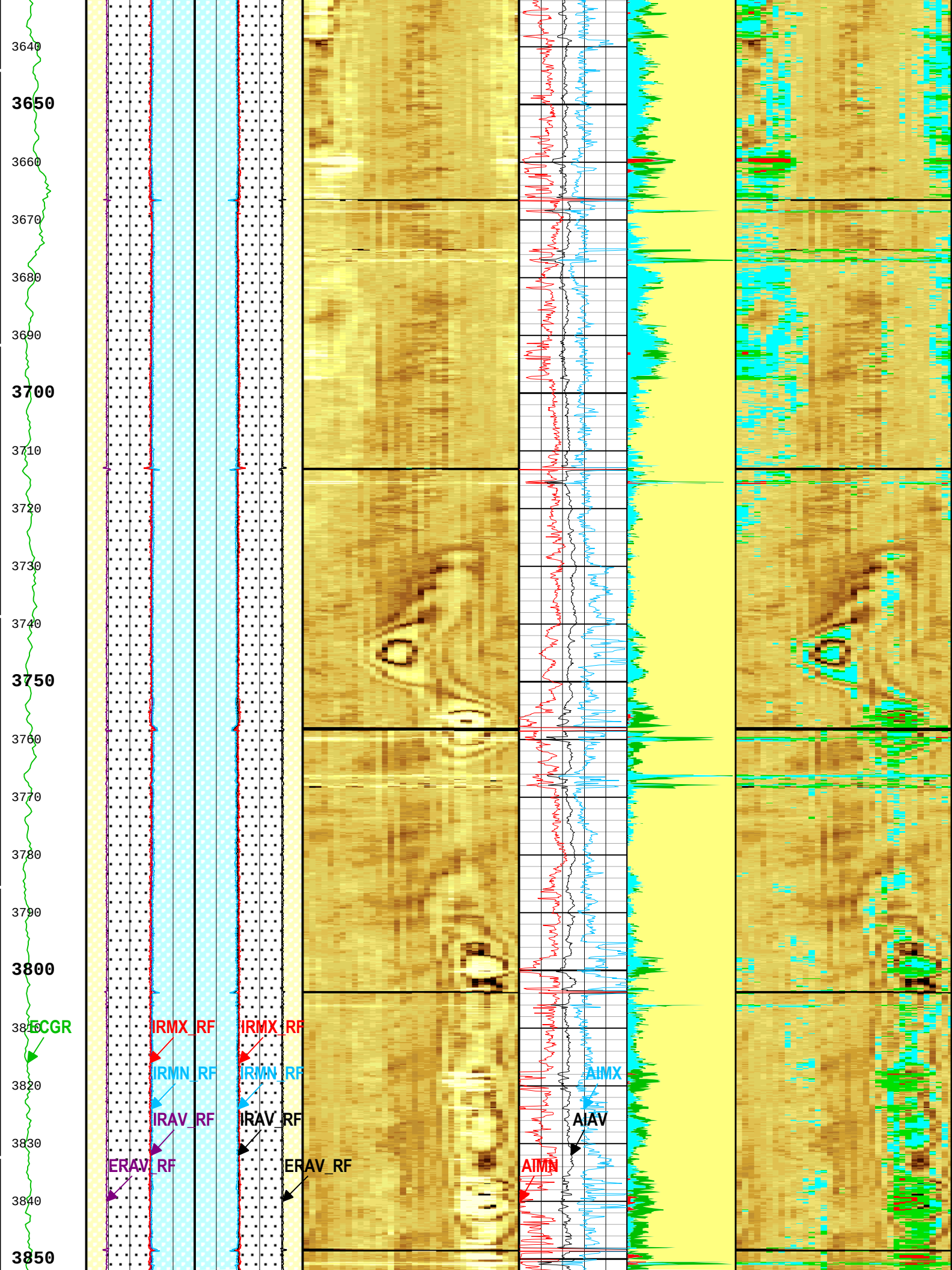

2540
2550
2560
2570
2580
2590
2600
2610
2620
2630
2640
2650
2660
2670
2680
2690
2700
2710
2720
2730
2740
2750
ECGR
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
AIMX
AIAV
AIMN

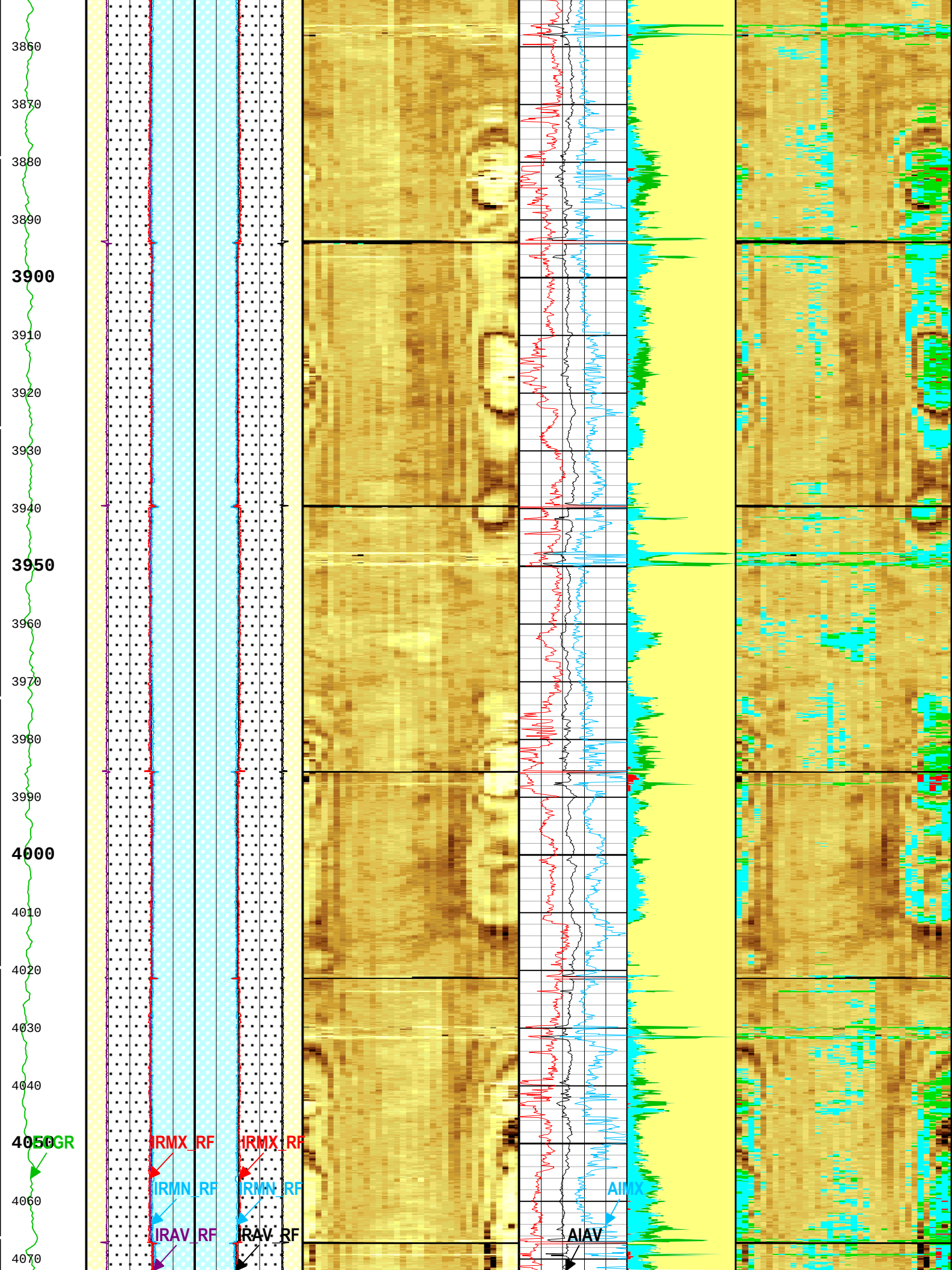

2760
2770
2780
2790
2800
2810
2820
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
GR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIAV
AIMN

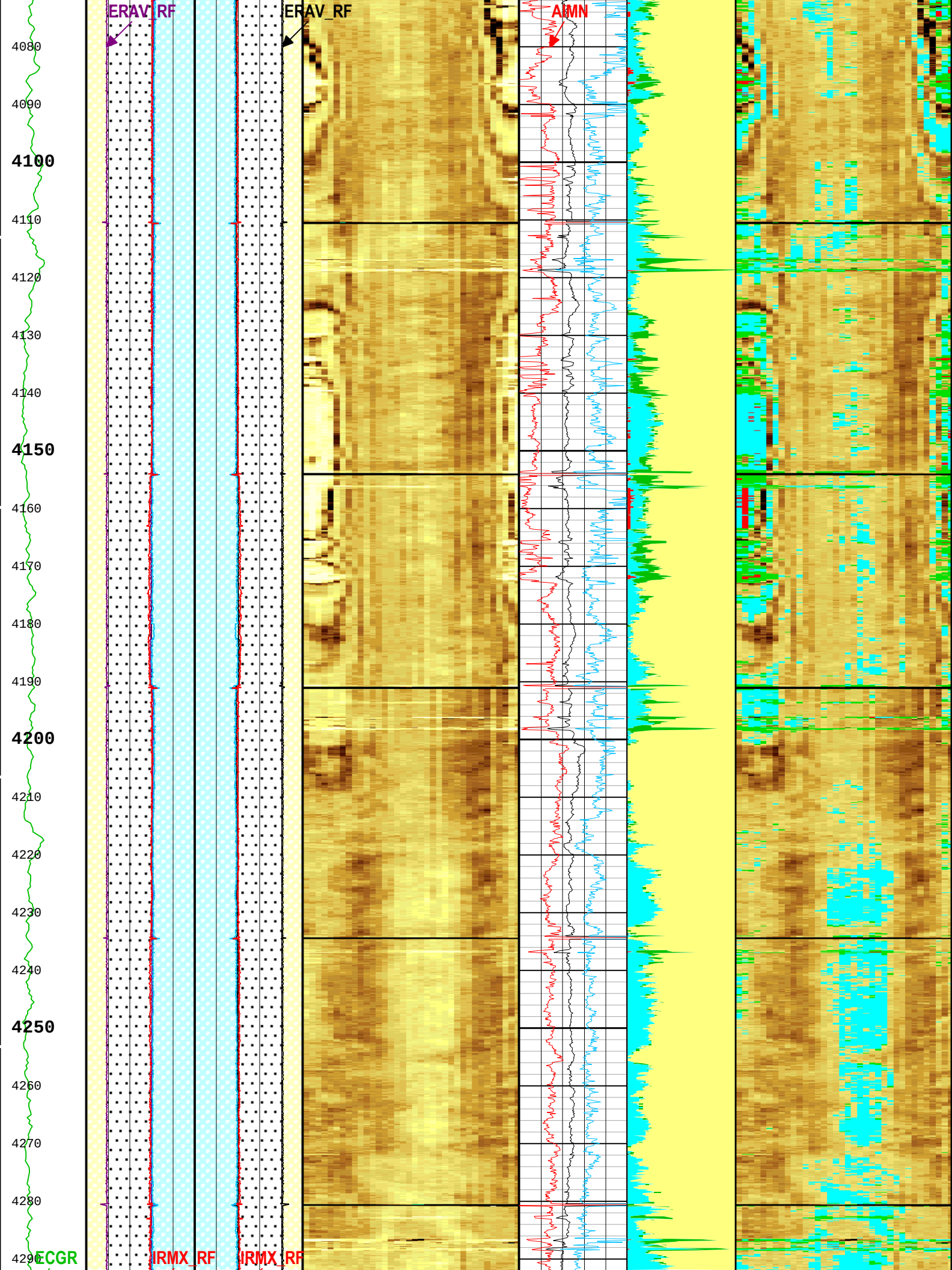

2980
2990
3000
3010
3020
3030
3040
3050
3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

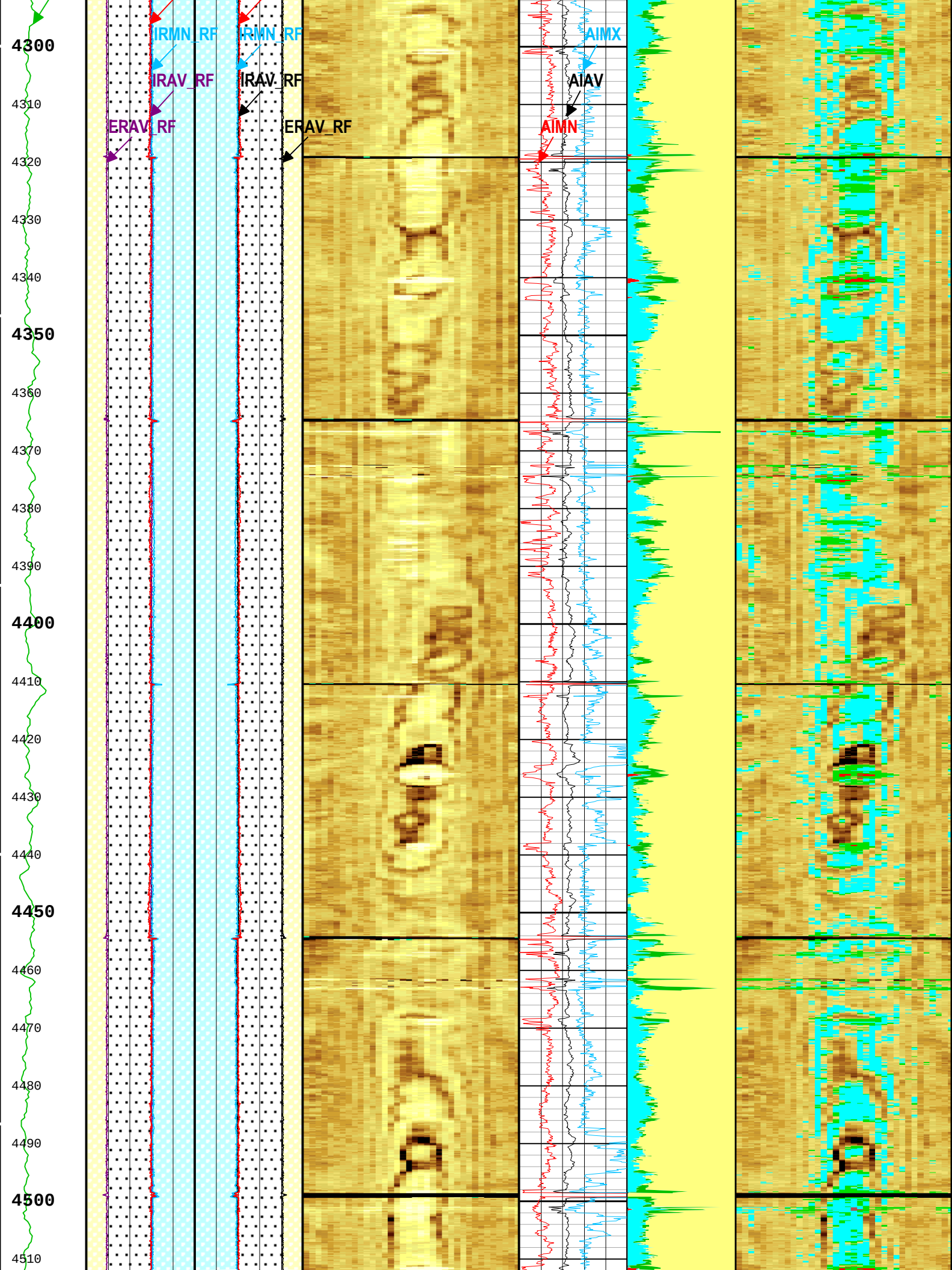

3200
3210
3220
3230
3240
3250
3260
3270
3280
3290
3300
3310
3320
3335
3340
3350
3360
3370
3380
3390
3400
3410
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

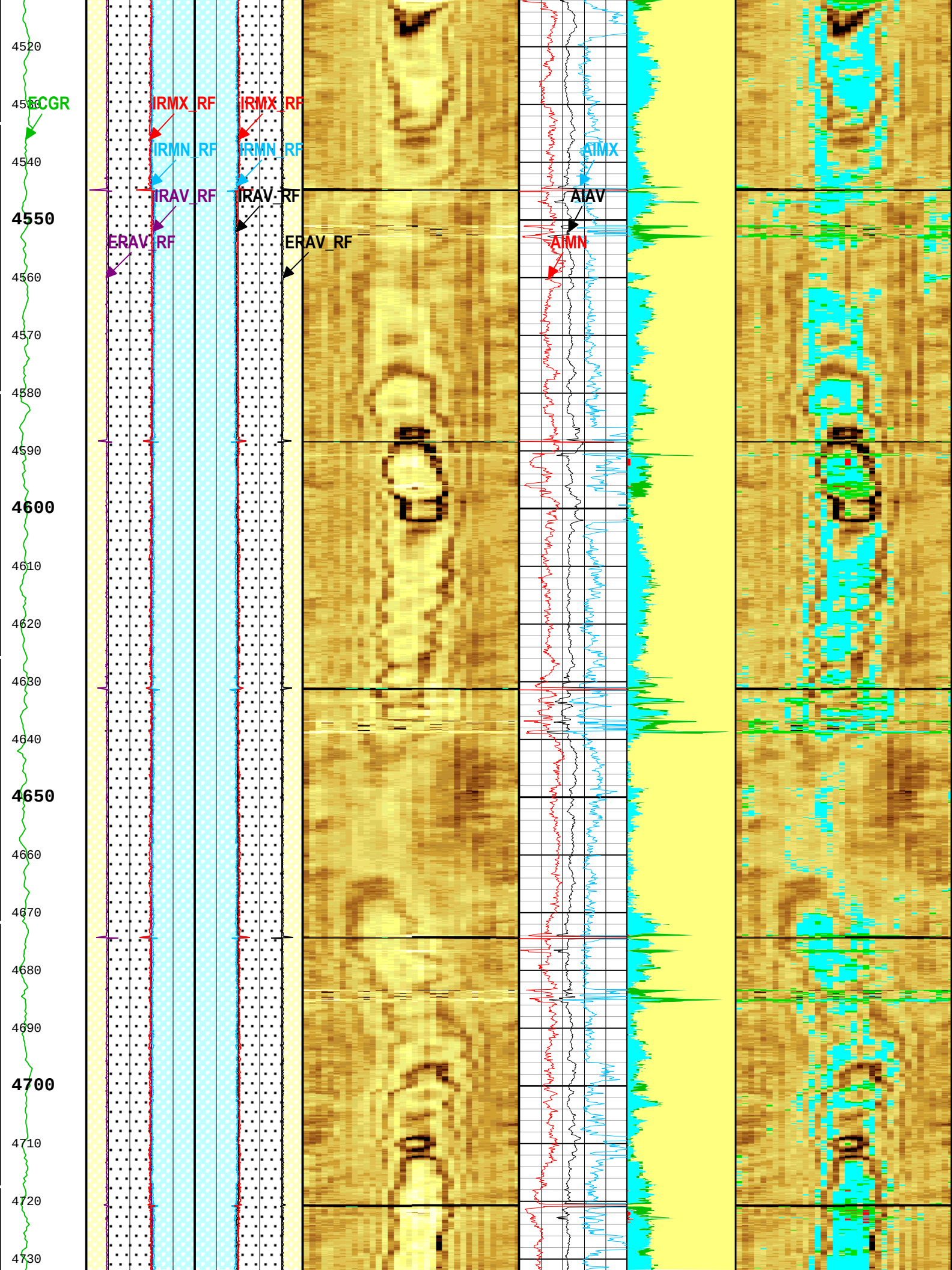

3420
3430
3440
3450
3460
3470
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
3580
3590
3600
3610
3620
3630
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

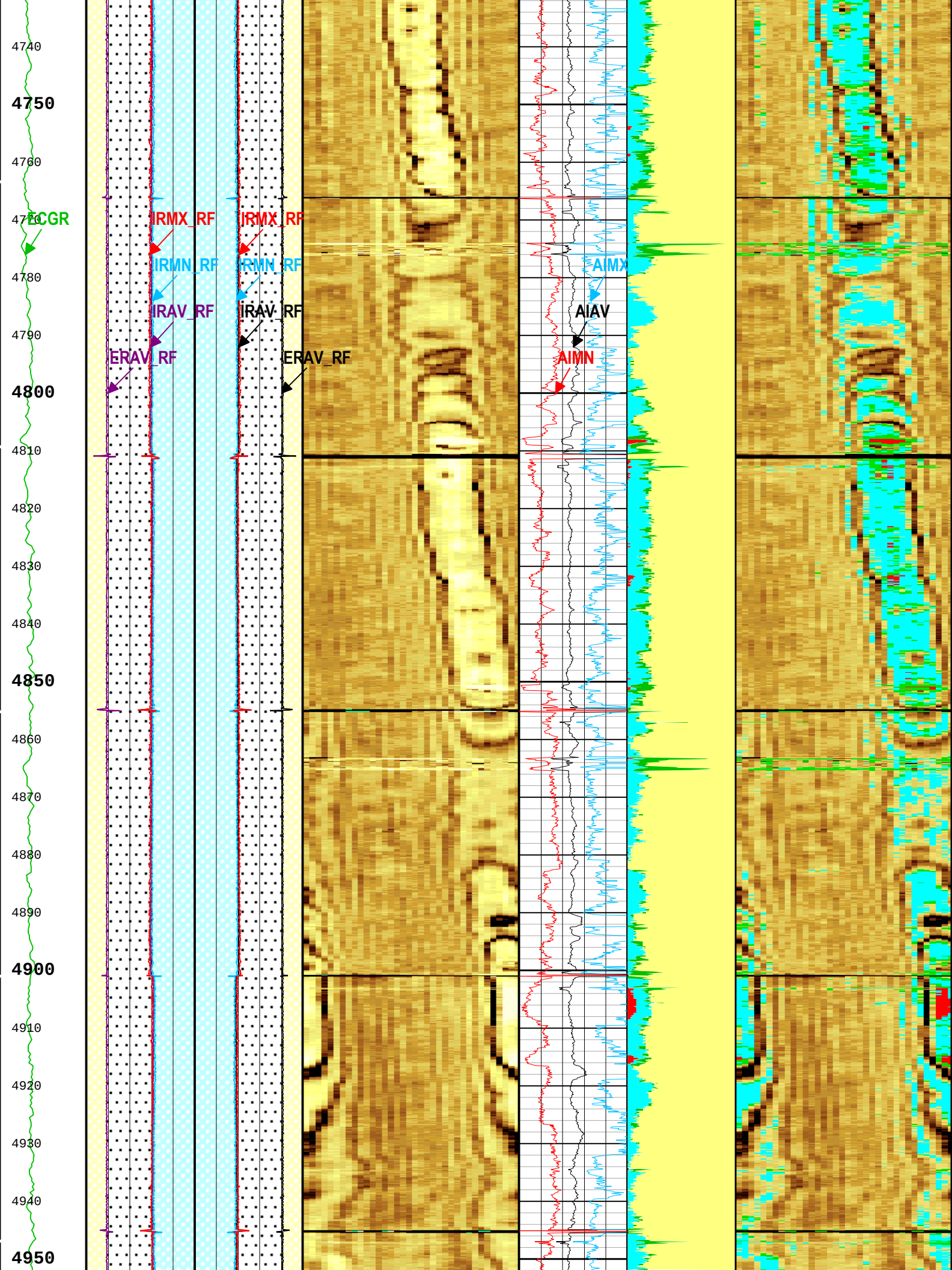

3640
3650
3660
3670
3680
3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
3800
3810
3820
3830
3840
3850
ECGR
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
AIMX
AIAV
AIMN

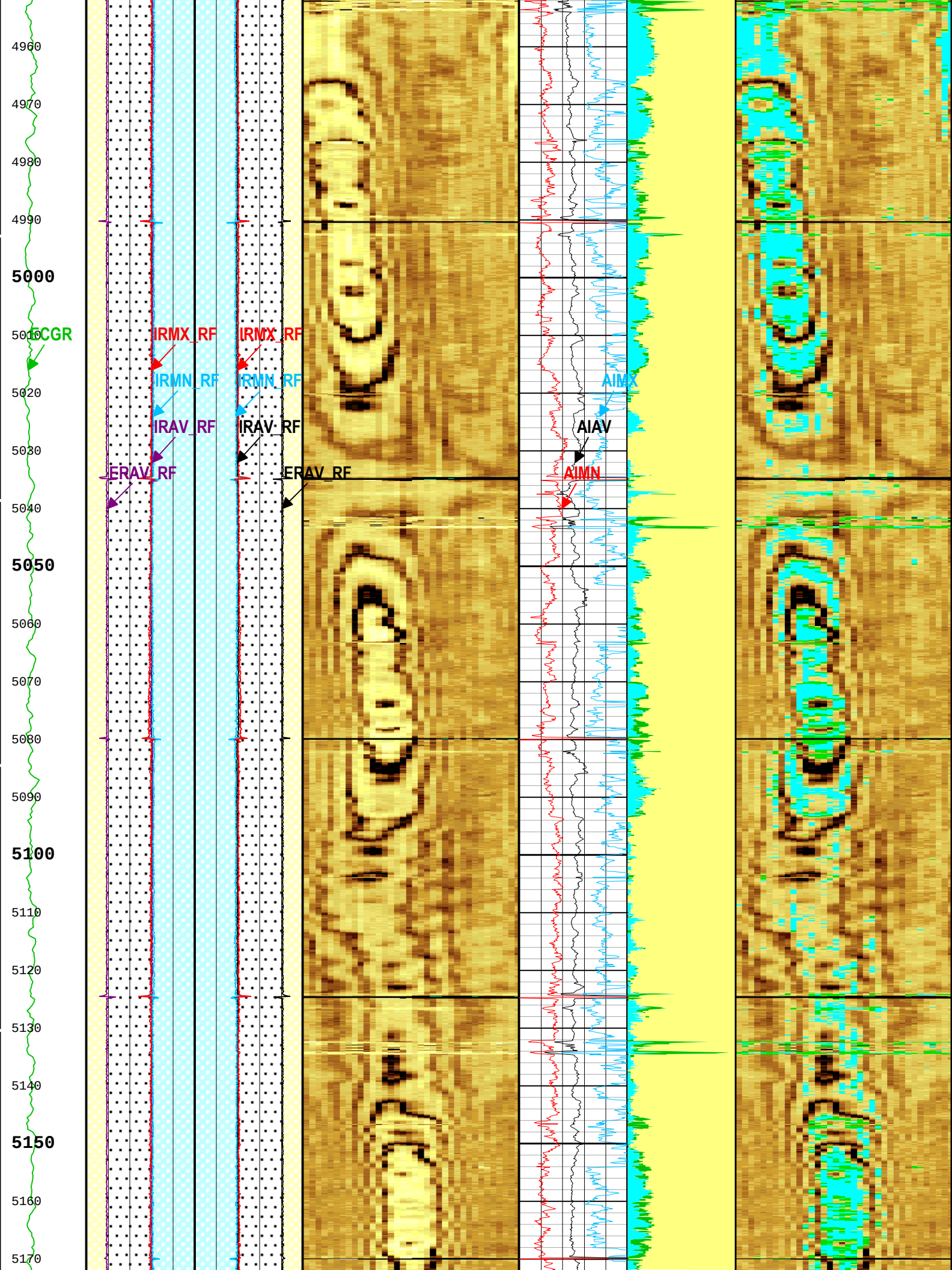

3860
3870
3880
3890
3900
3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
4040
4050
4060
4070
GR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
AIMX
AIAV

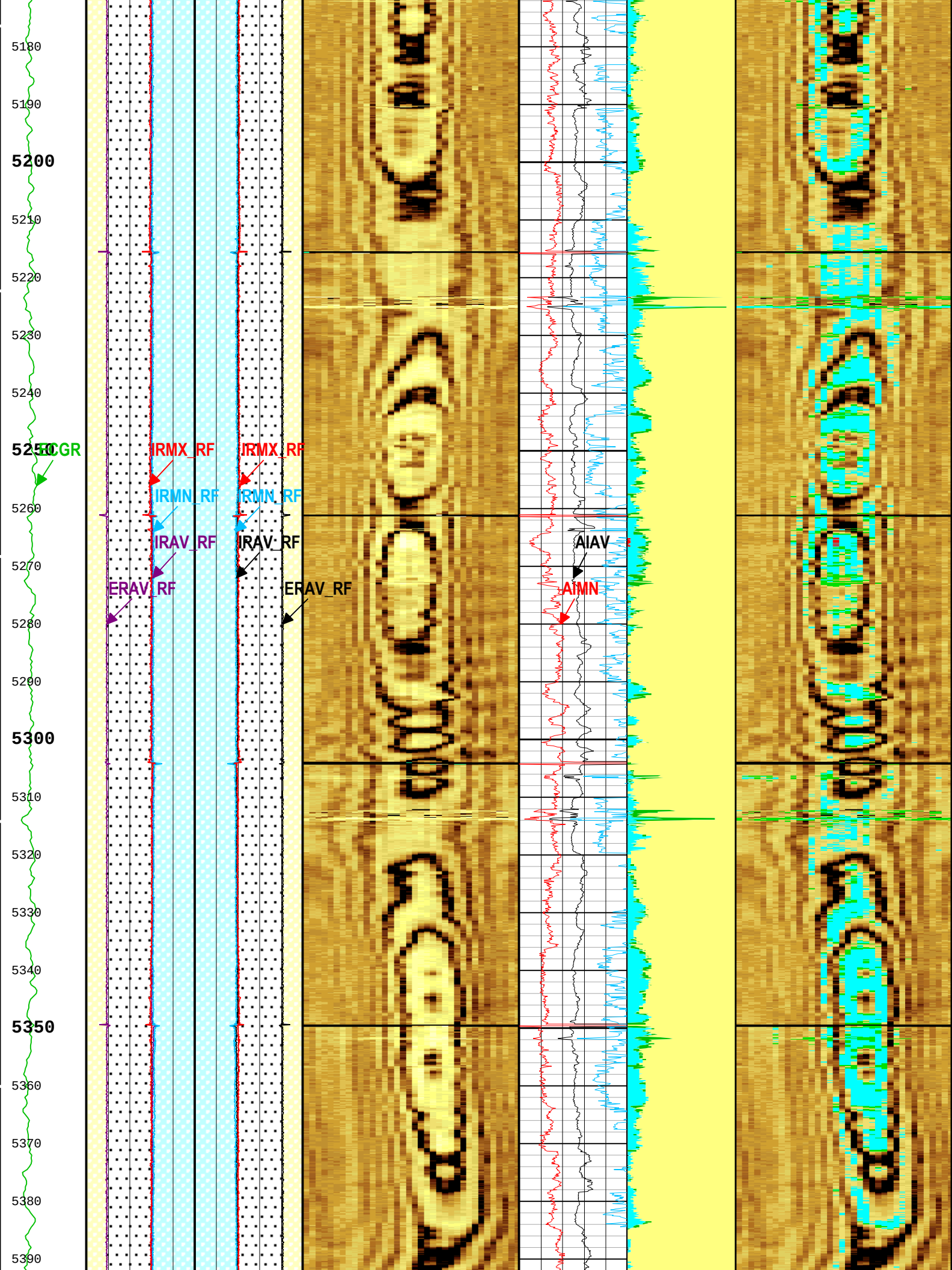

ERAV_RF
ERAV_RF
AMN
4080
4090
4100
4110
4120
4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
4270
4280
4290
ECGR
IRMX_RF
IRMX_RF

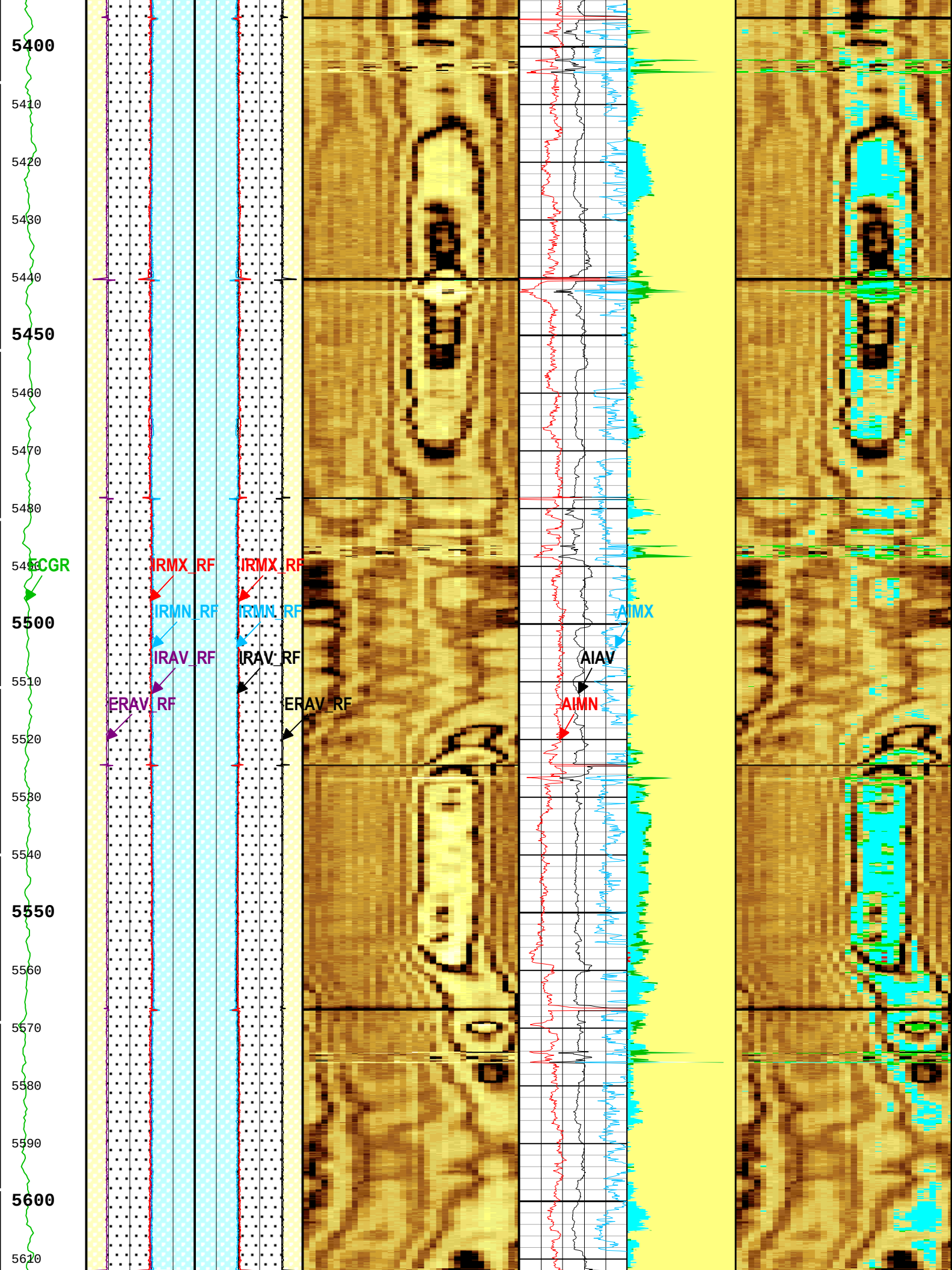

IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
4300
4310
4320
4330
4340
4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
4510

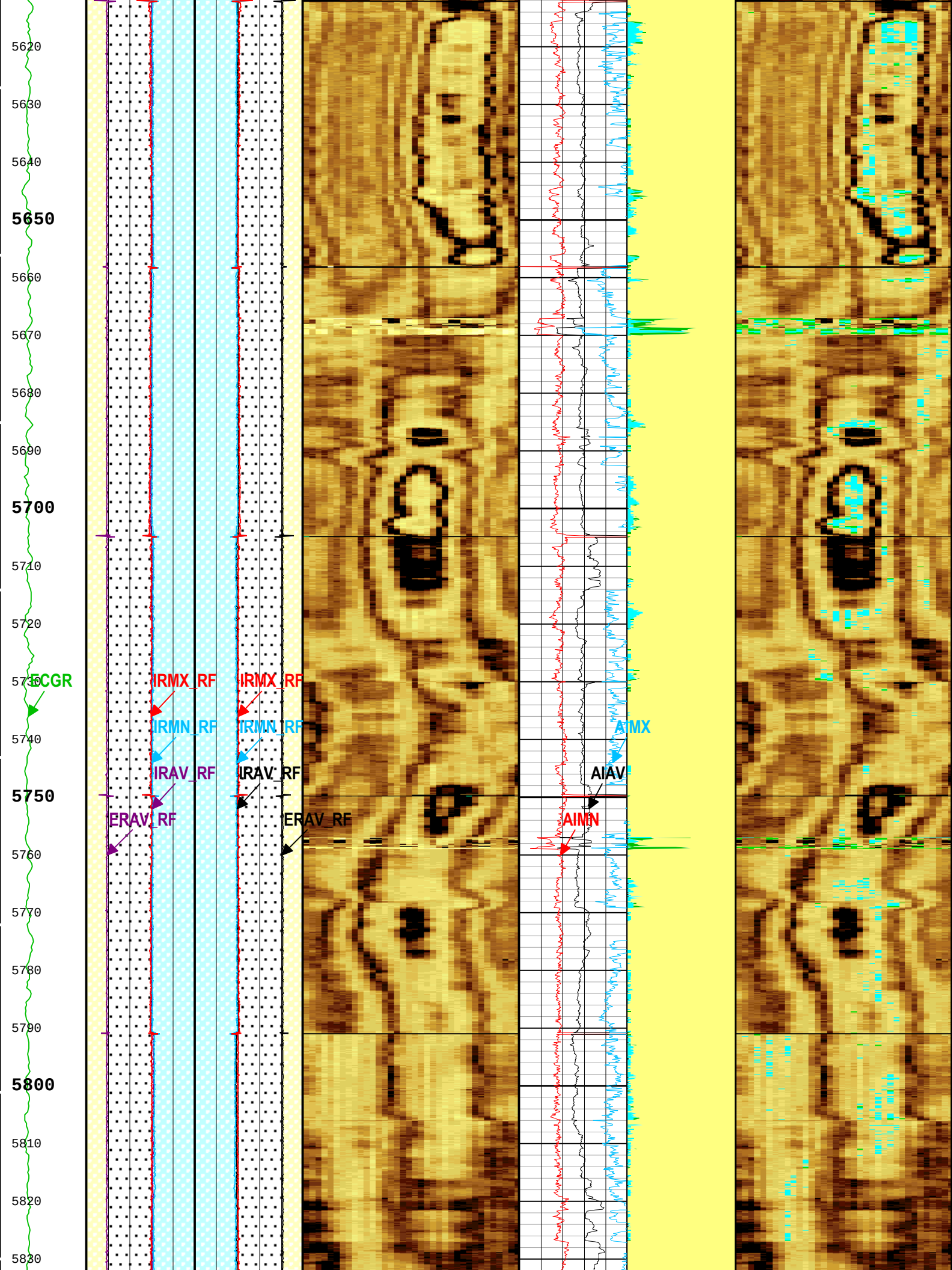

4520
4530
4540
4550
4560
4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
4720
4730
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

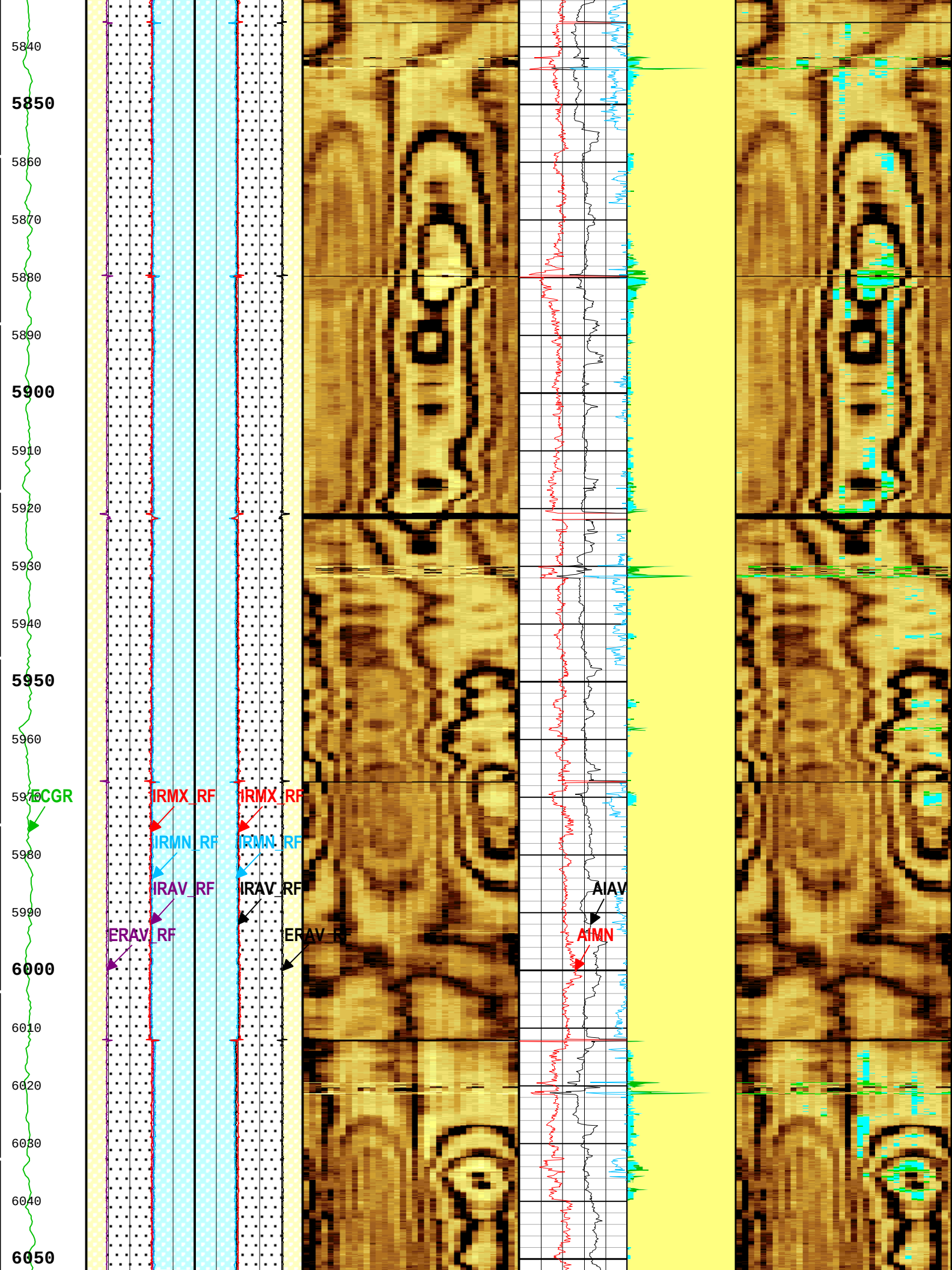

4740
4750
4760
4770
4780
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930
4940
4950
ECGR
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
AIMX
AIAV
AIMN

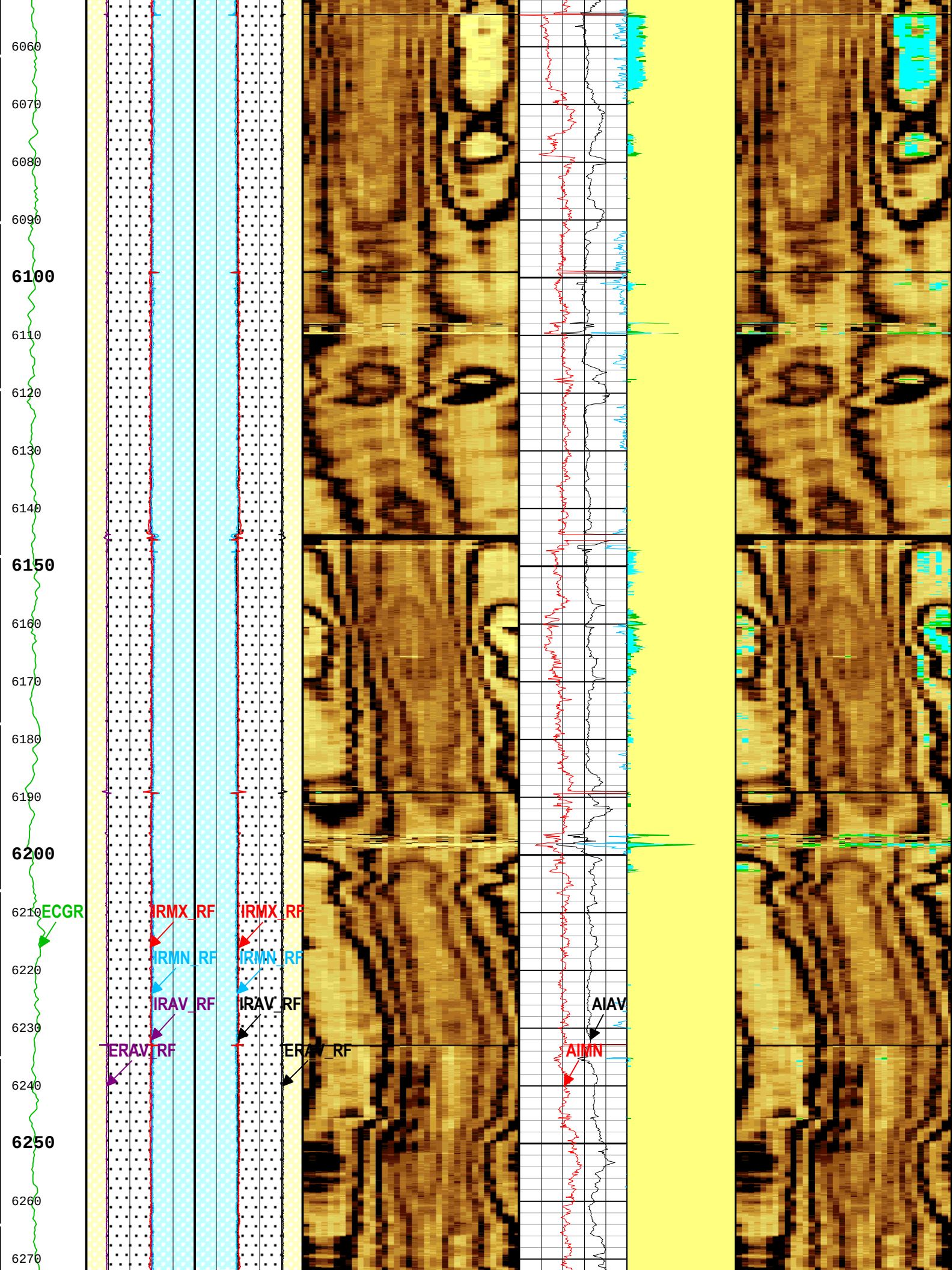

4960
4970
4980
4990
5000
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150
5160
5170
ECGR
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
AIMX
AIAV
AIMN

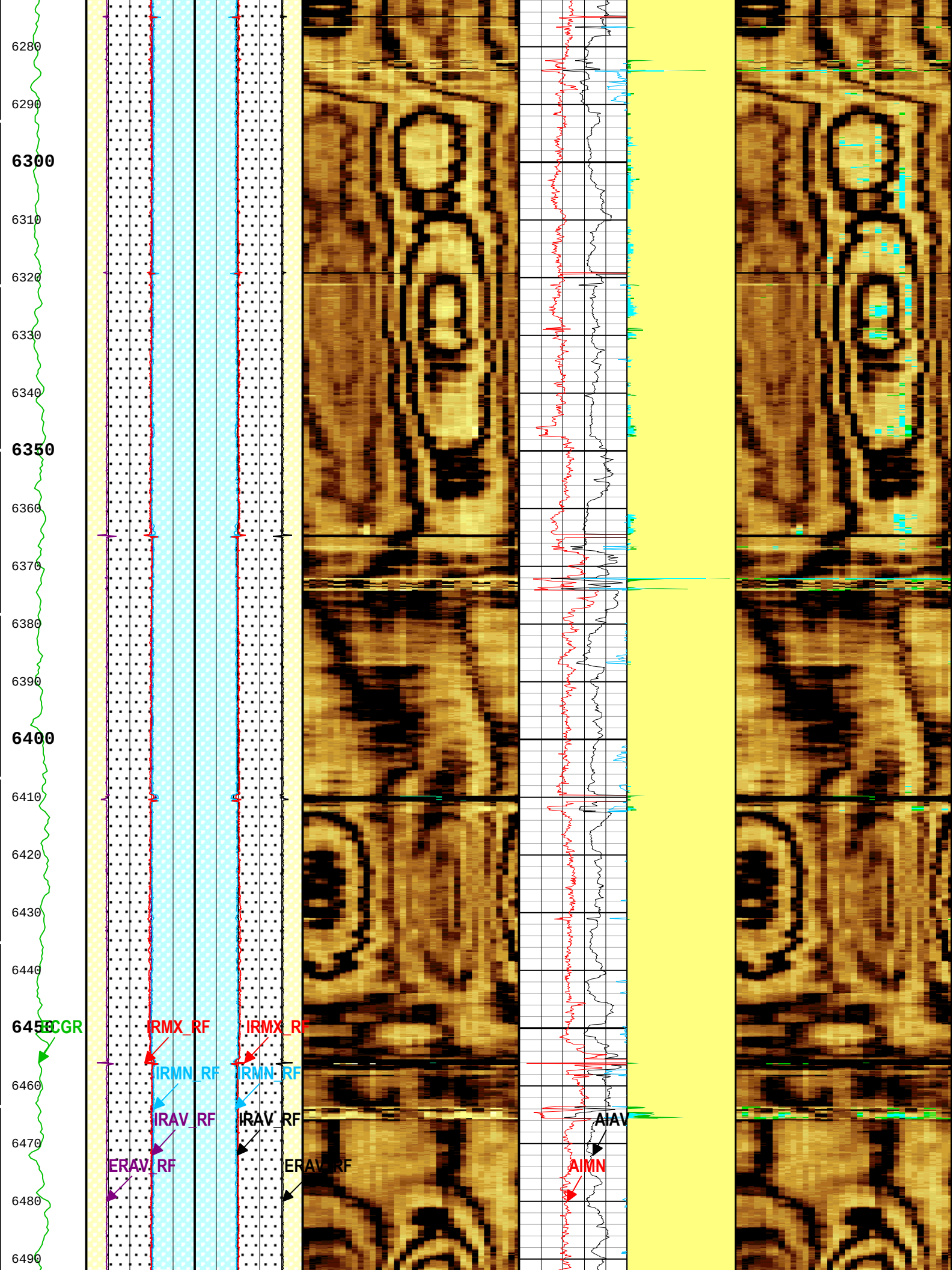

5180
5190
5200
5210
5220
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370
5380
5390
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIAV
AIMN

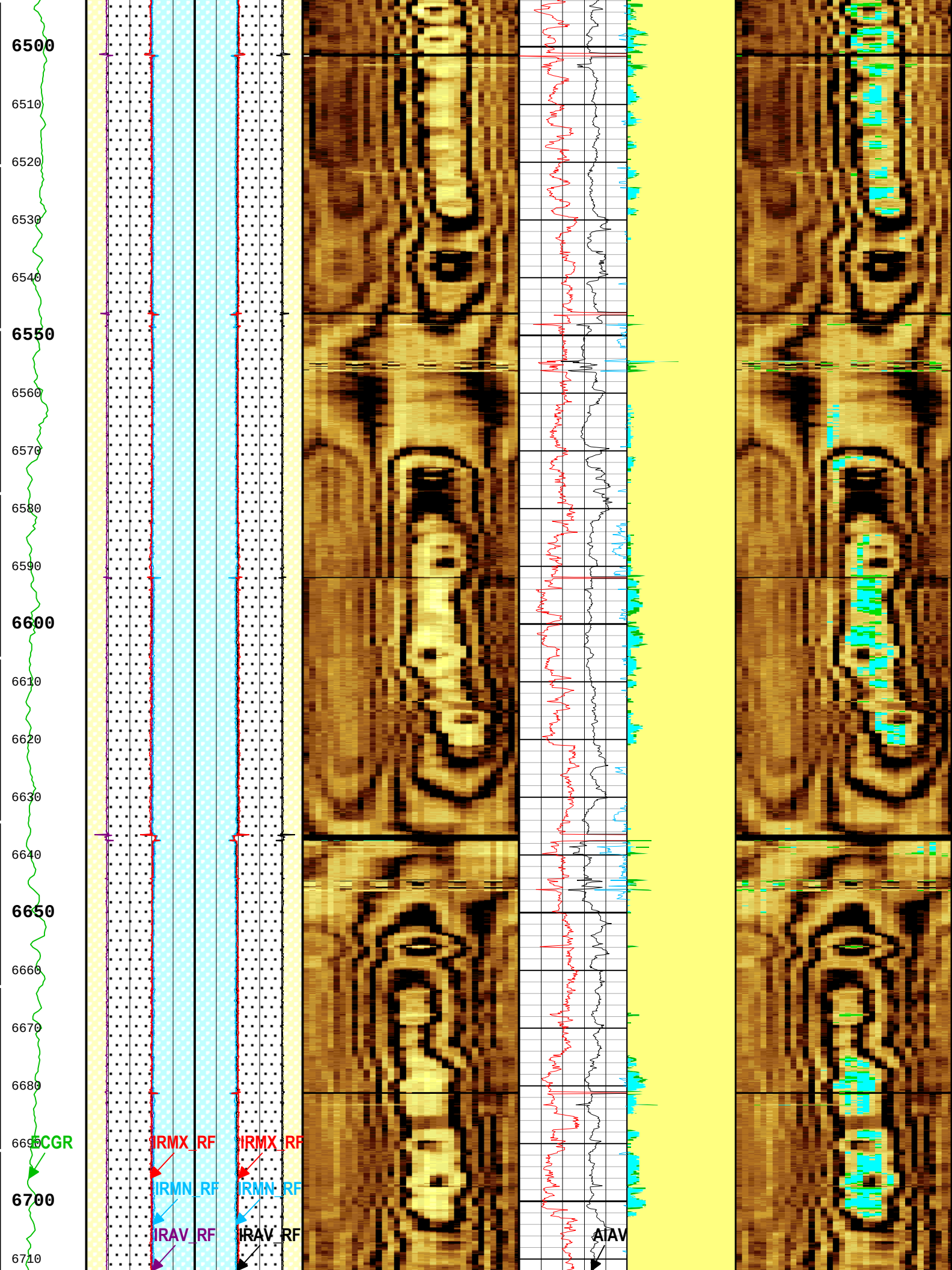

5400
5410
5420
5430
5440
5450
5460
5470
5480
5490
5500
5510
5520
5530
5540
5550
5560
5570
5580
5590
5600
5610
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

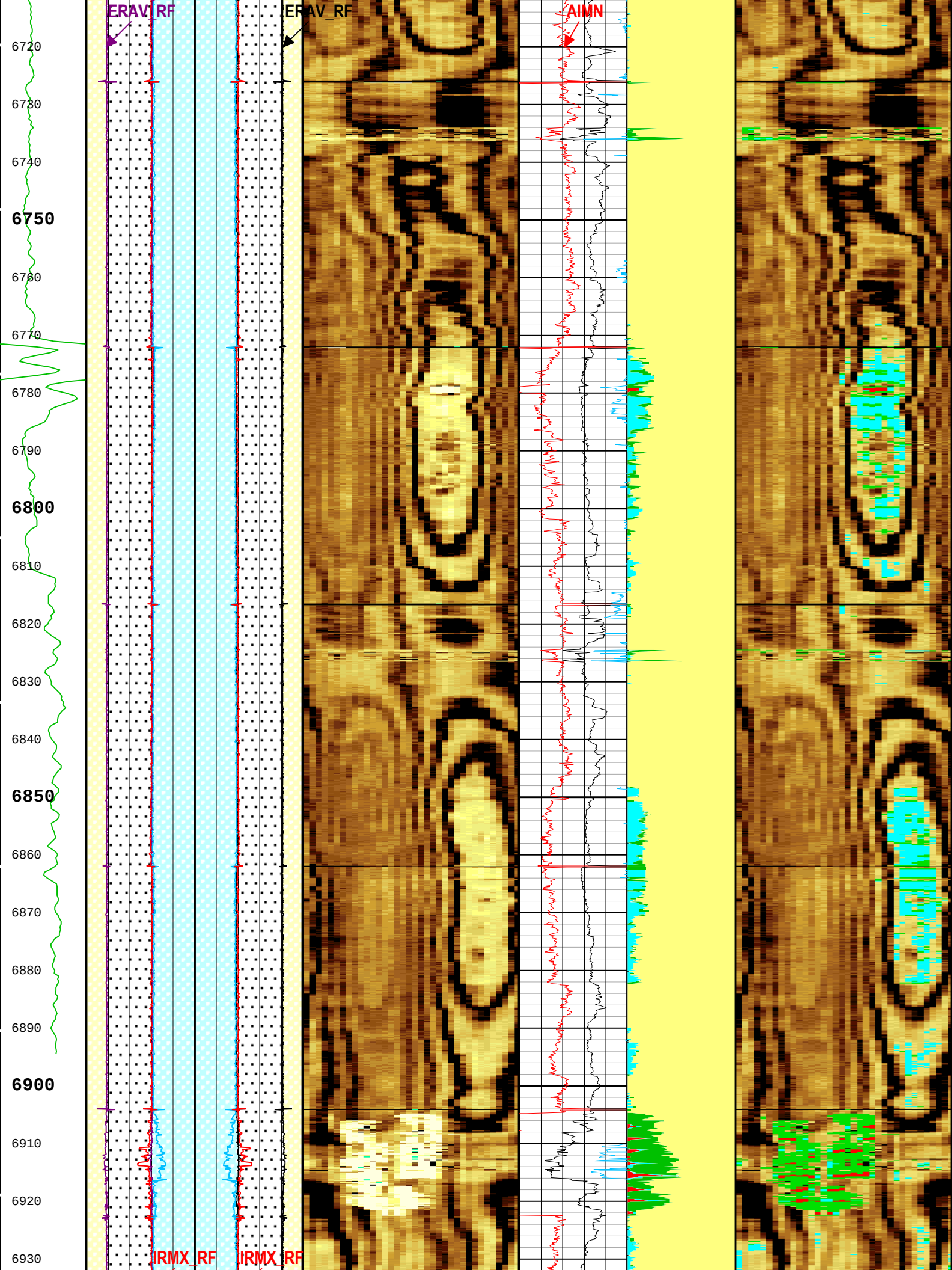

5620
5630
5640
5650
5660
5670
5680
5690
5700
5710
5720
5730
5740
5750
5760
5770
5780
5790
5800
5810
5820
5830
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN

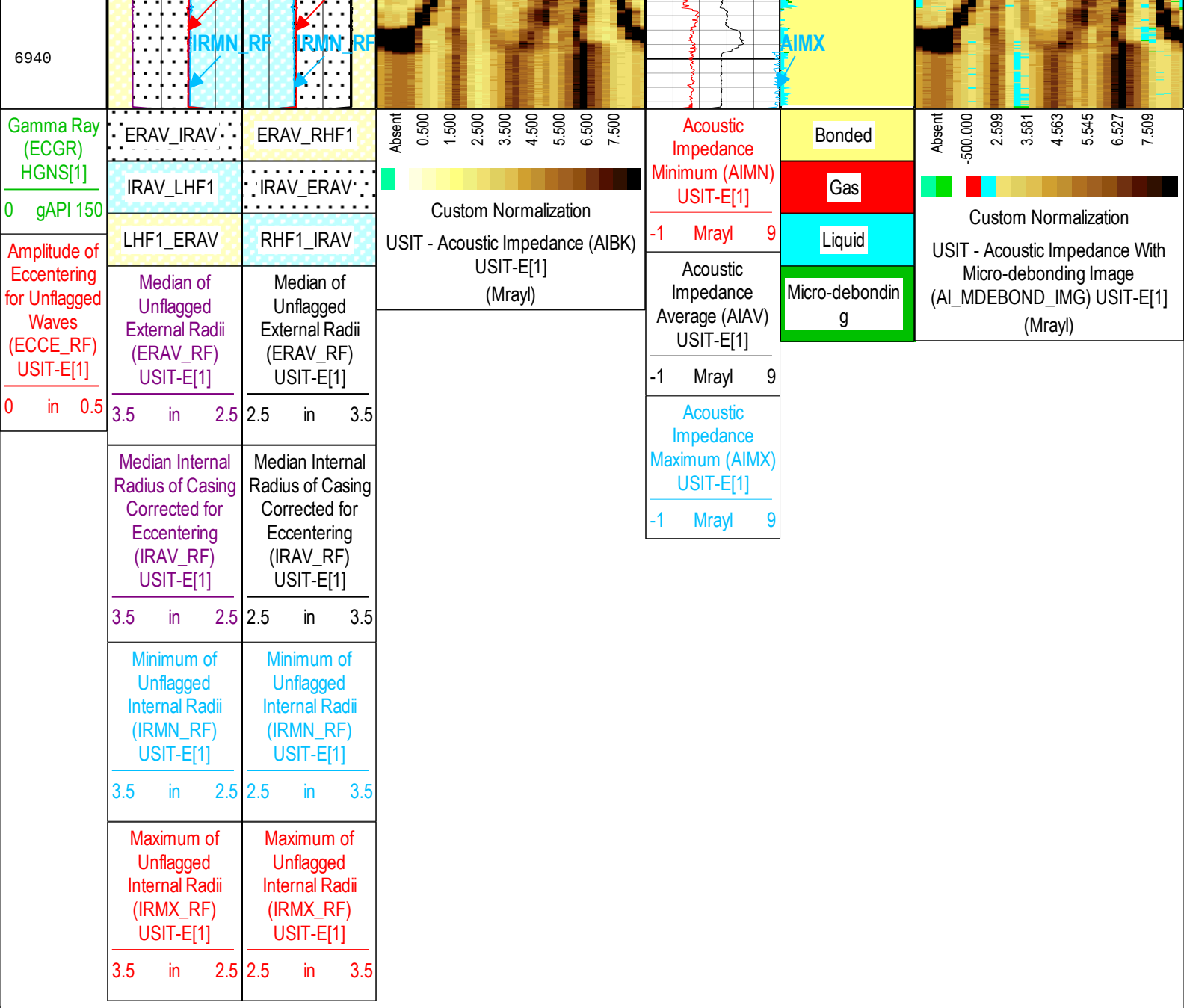

5840
5850
5860
5870
5880
5890
5900
5910
5920
5930
5940
5950
5960
5970
5980
5990
6000
6010
6020
6030
6040
6050
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIAV
AIMN


6060
6070
6080
6090
6100
6110
6120
6130
6140
6150
6160
6170
6180
6190
6200
6210
6220
6230
6240
6250
6260
6270
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIAV
AIMN


6280
6290
6300
6310
6320
6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
6440
6450
6460
6470
6480
6490
CGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
AIAV
AIMN


6500
6510
6520
6530
6540
6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
6670
6680
6690
6700
6710
CGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
AIAV


ERAV_RF
ERAV_RF
AIMN
6720
6730
6740
6750
6760
6770
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880
6890
6900
6910
6920
6930
IRMX_RF
IRMX_RF



TIME_1900 - Time Marked every 60.00 (s)

Description: USI Cement Format: Log (LBV1_USI Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jul-2016 09:41:04

Composite 1

Corrosion 5 in = 100 ft

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[7]:Up	Up	85.65 ft	6947.43 ft	19-Jul-2016 9:27:50 AM	19-Jul-2016 12:13:06 PM	ON	7.00 ft	No
ONE	Log[9]:Up	Up	12.53 ft	336.93 ft	19-Jul-2016 1:55:07 PM	19-Jul-2016 2:07:42 PM	ON	17.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:FF-32F (IW 62)

Composite 1:S006

Description: USI Composite Format: Log (LBV1_USI Corrosion 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jul-2016 09:41:41

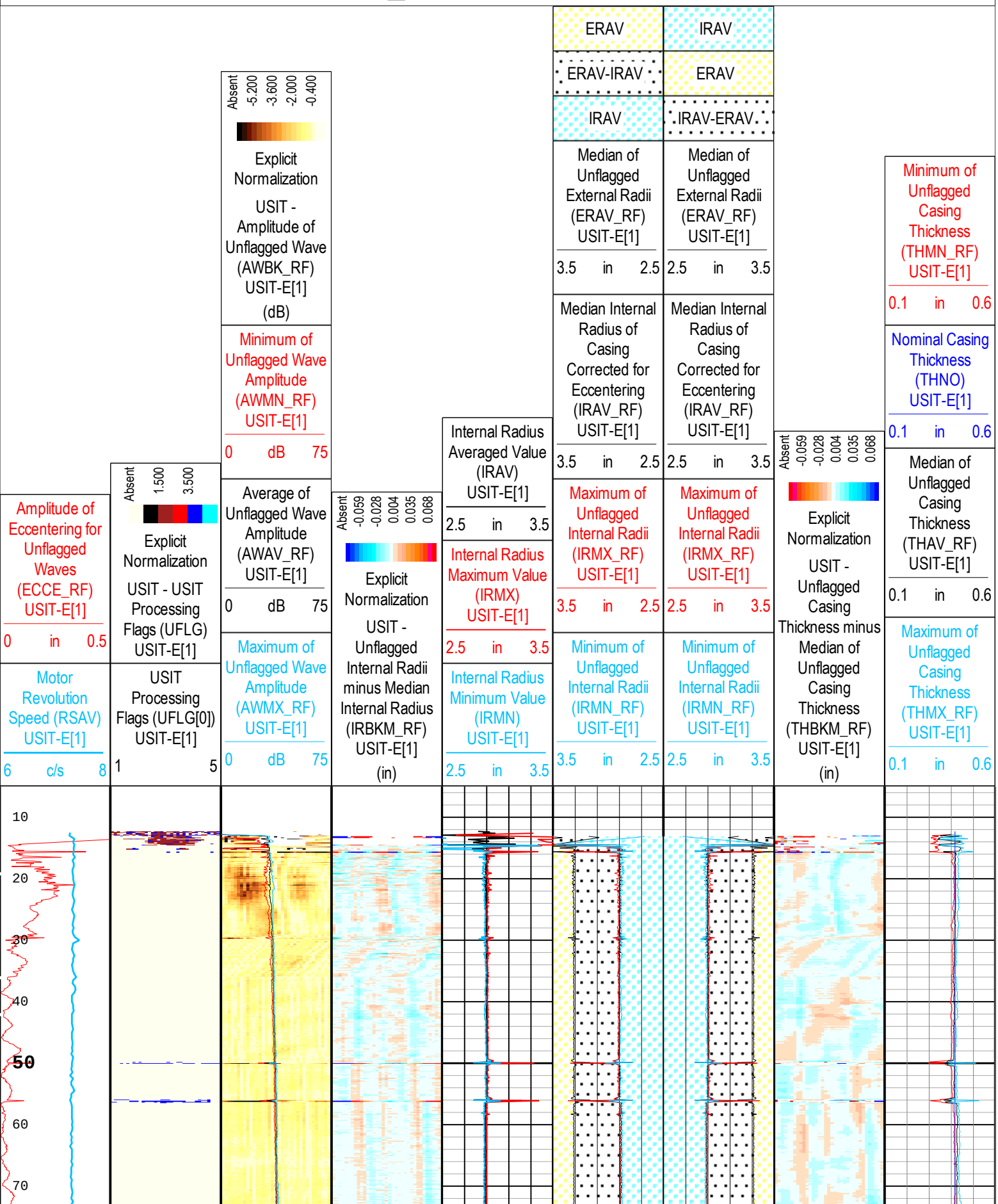
TIME_1900 - Time Marked every 60.00 (s)

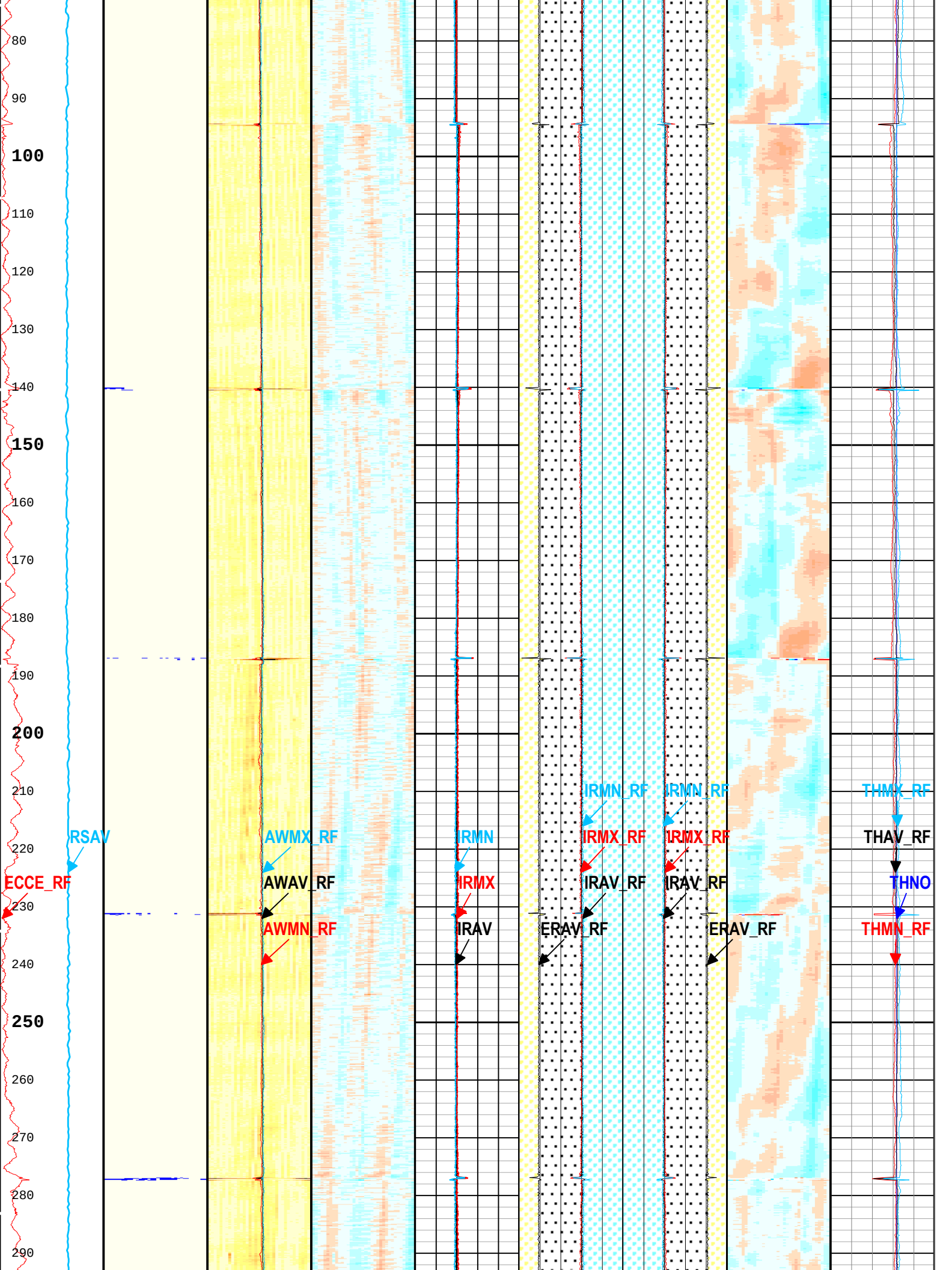
USIT Processing Flags (UFLG[0]) USIT-E[1]

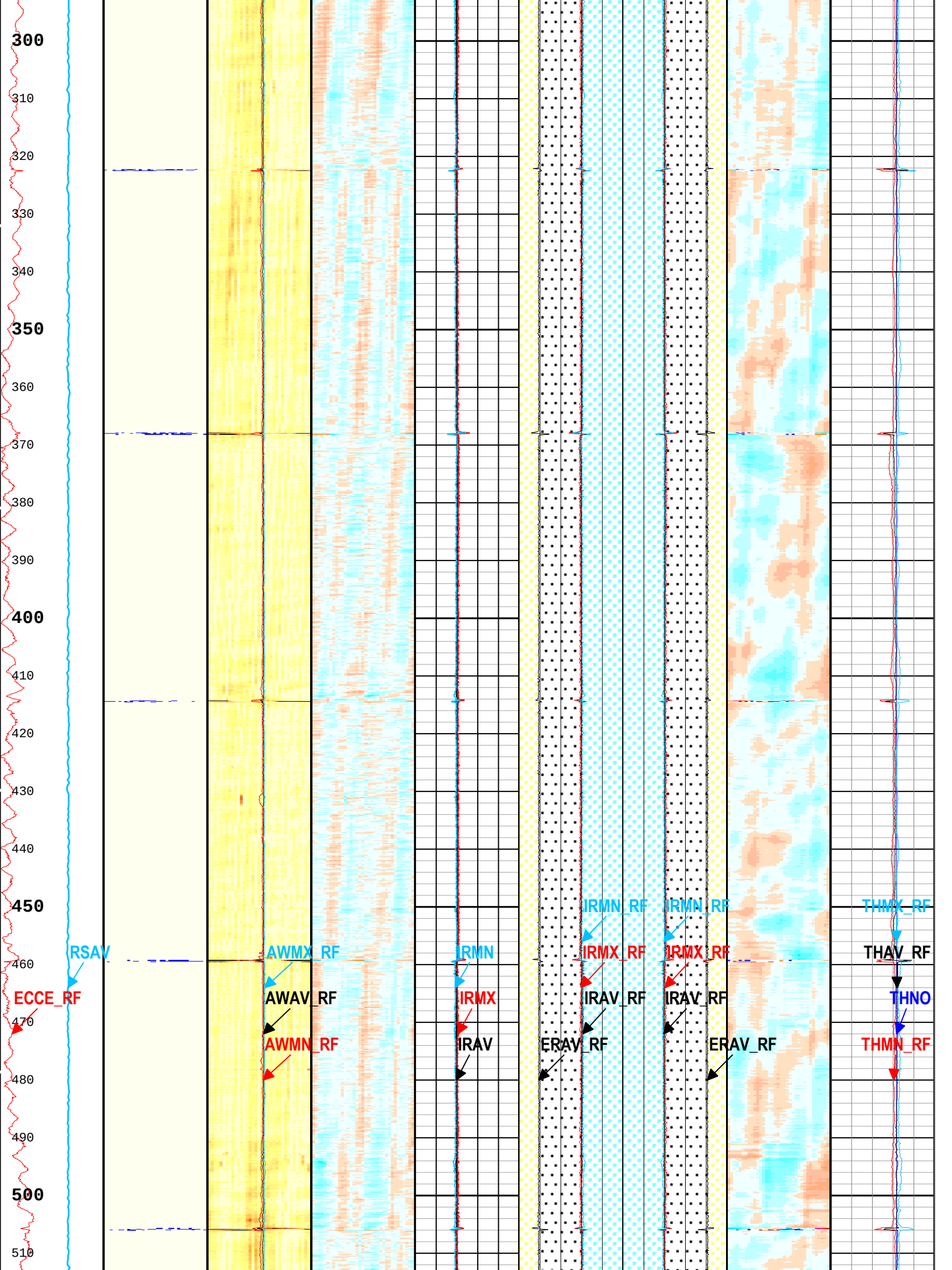
USIT Processing Flags (UFLG[0]) USIT-E[1]

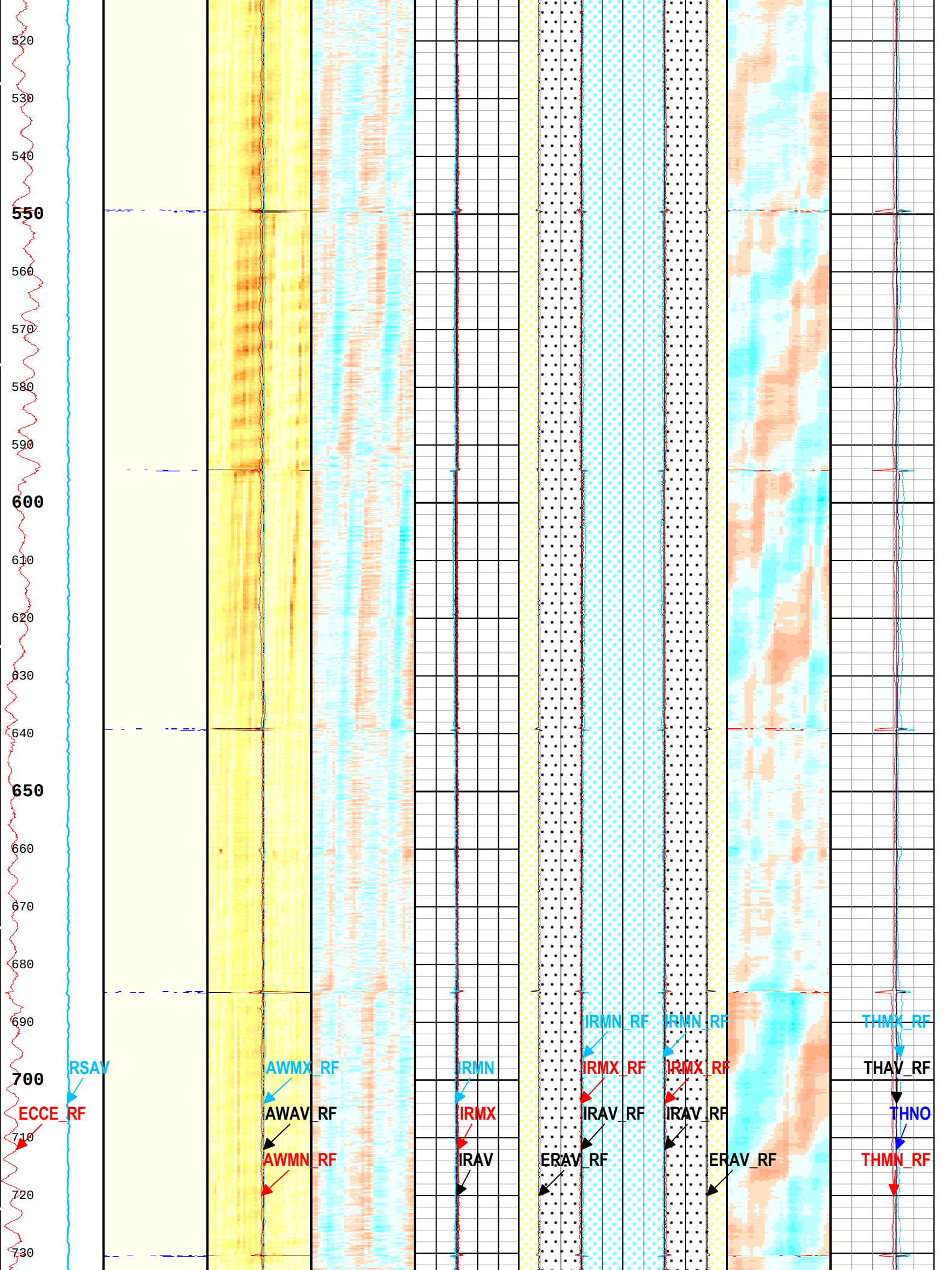
1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

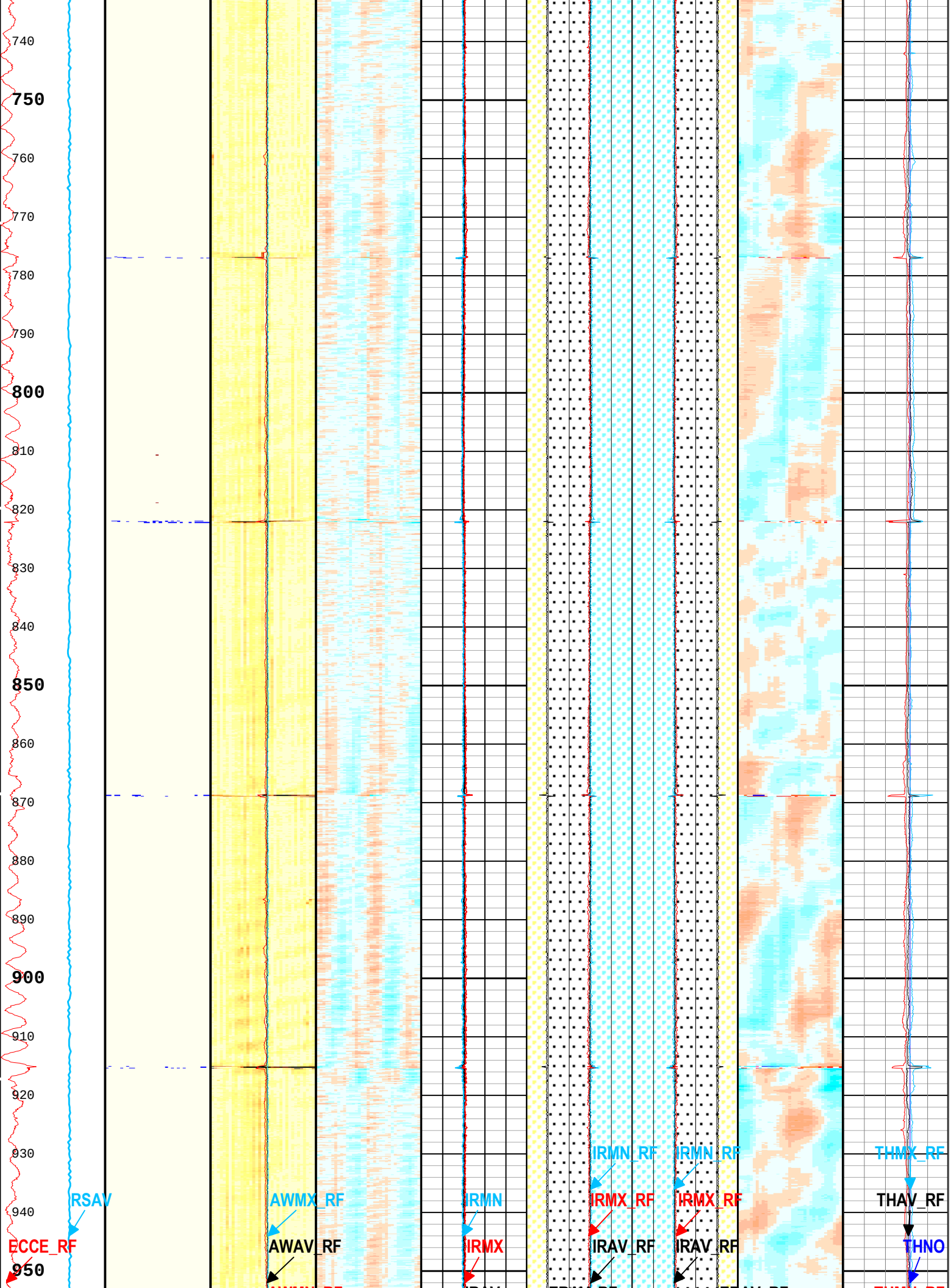
- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error

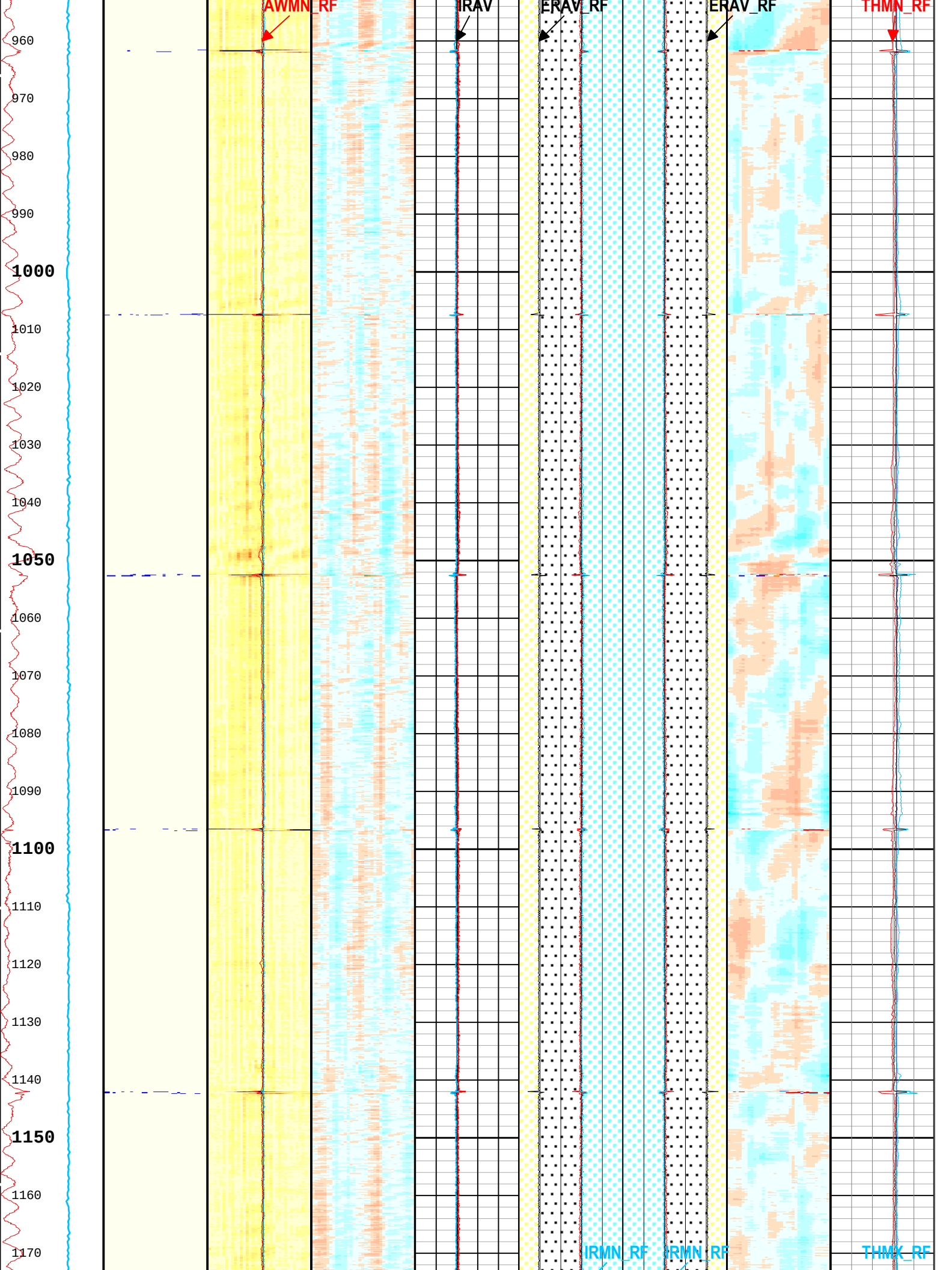


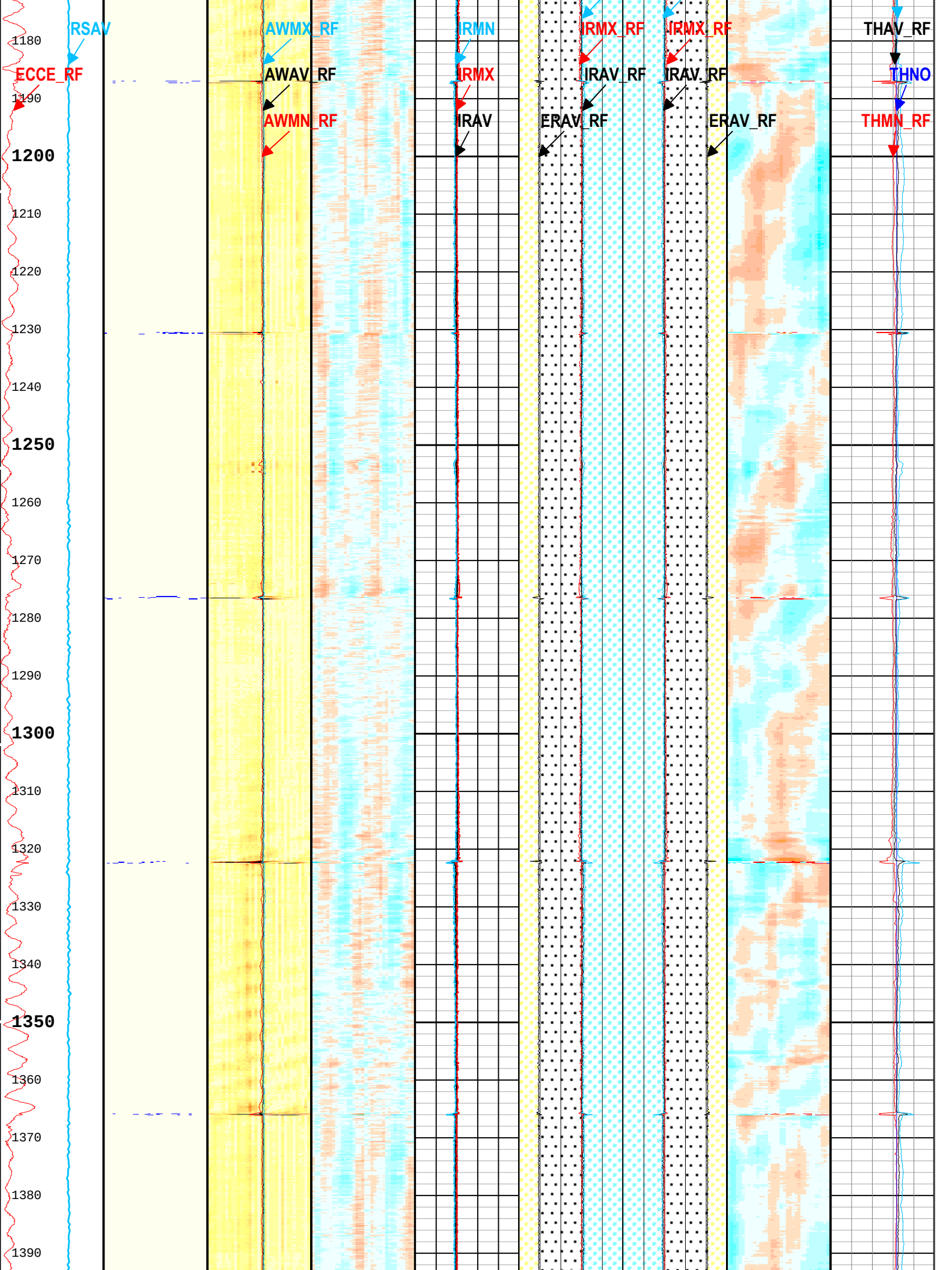

80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

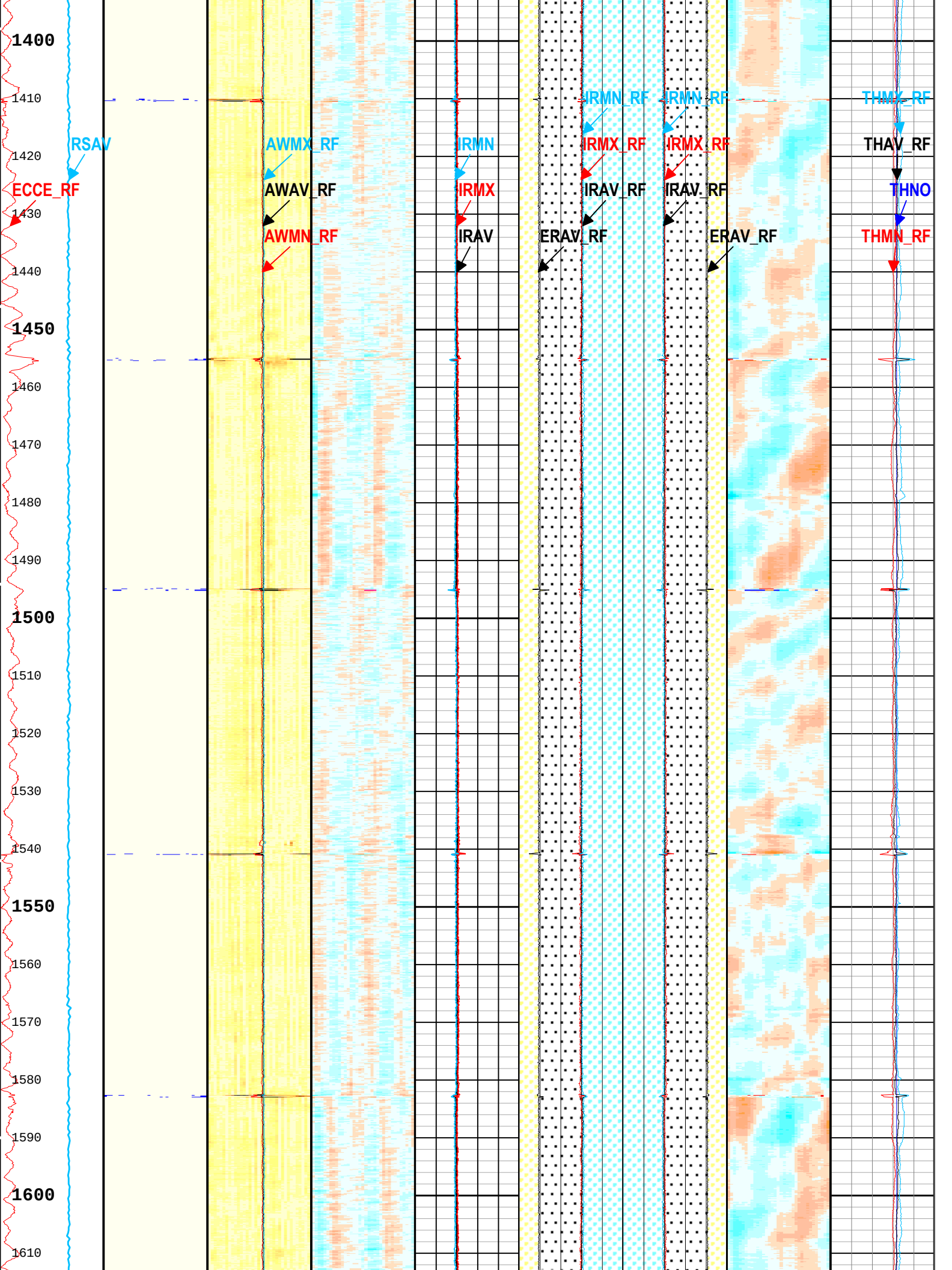

300
310
320
330
340
350
360
370
380
390
400
410
420
430
440
450
460
470
480
490
500
510
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

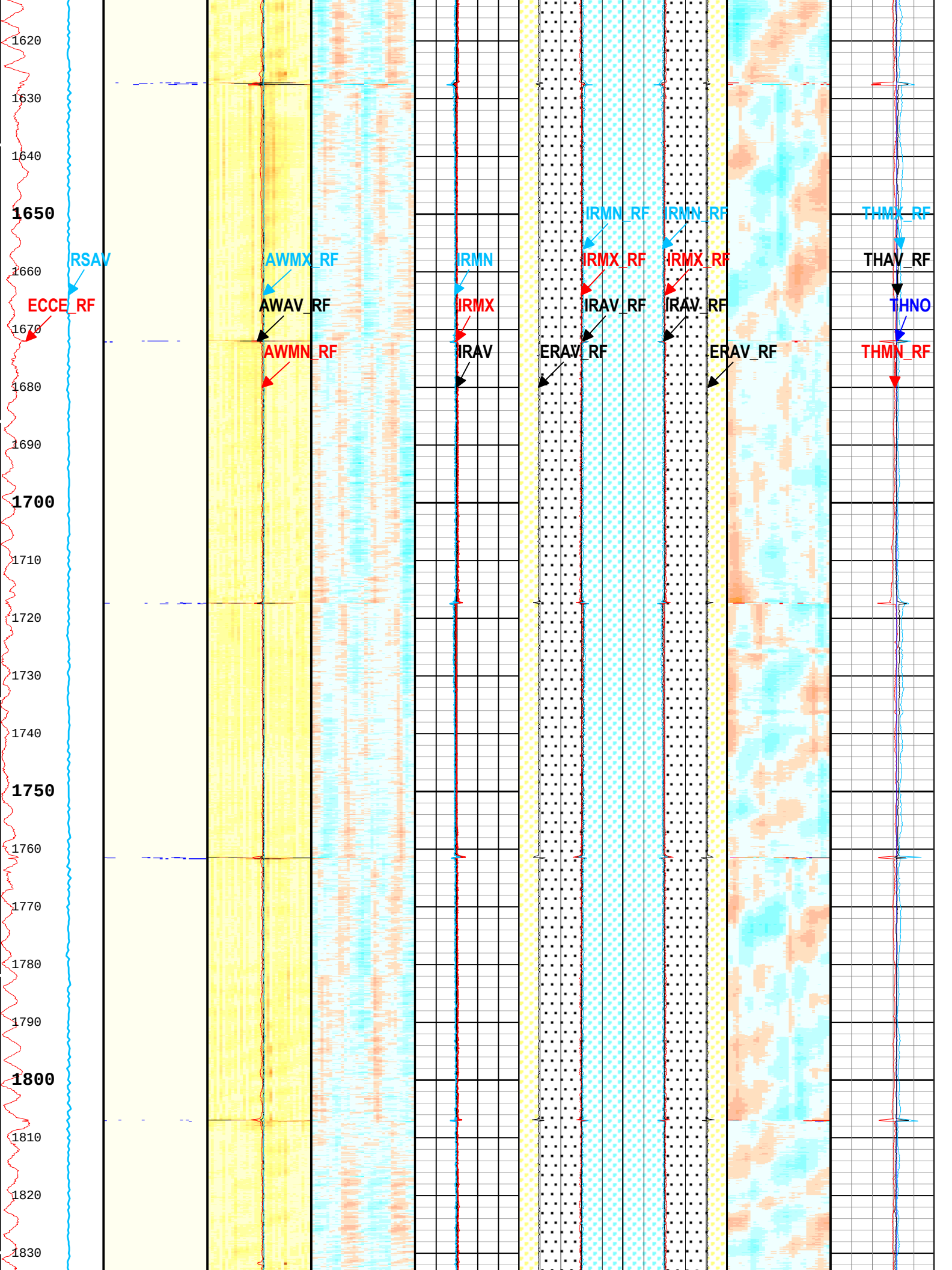

520
530
540
550
560
570
580
590
600
610
620
630
640
650
660
670
680
690
700
710
720
730
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

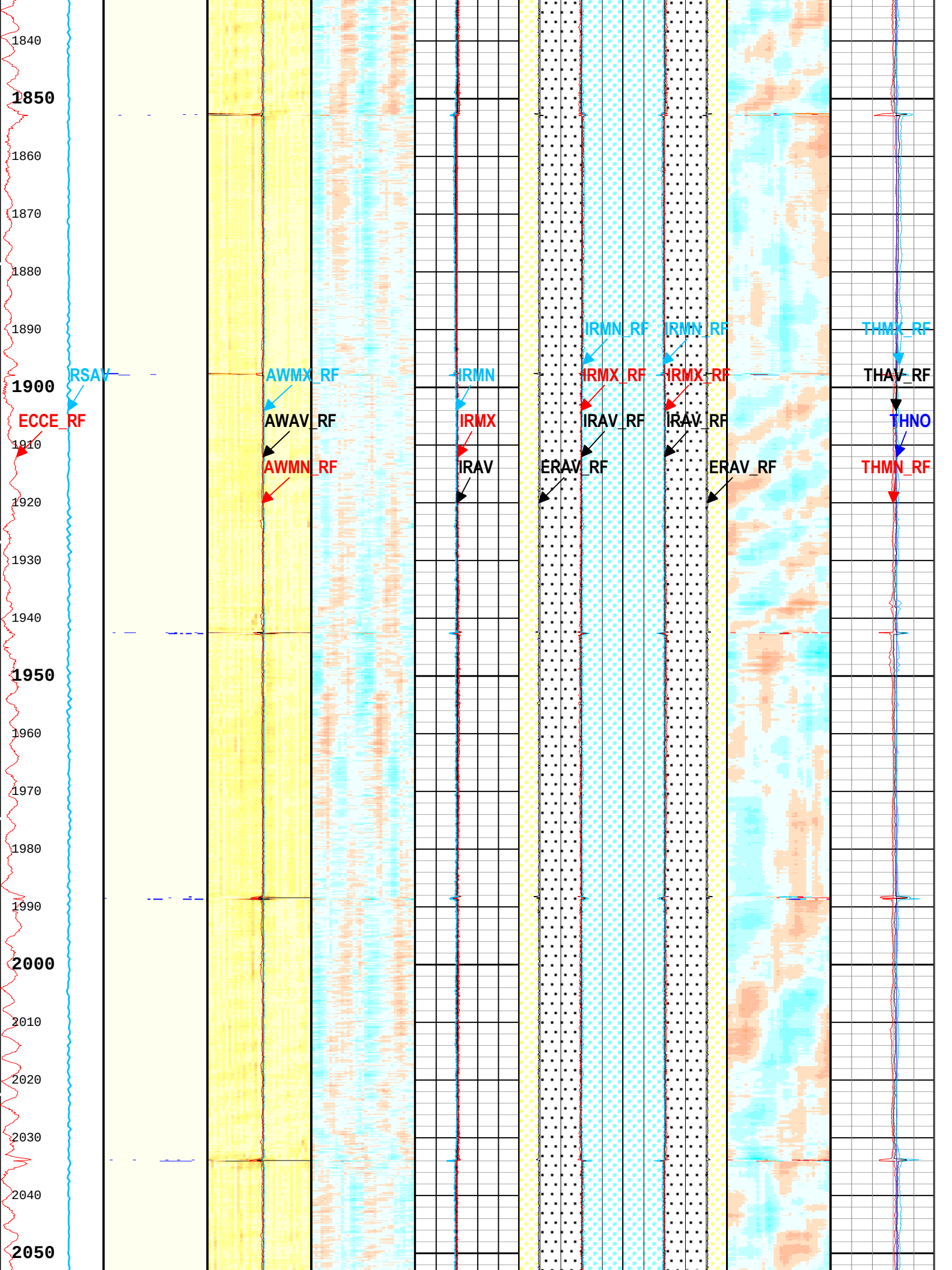

740
750
760
770
780
790
800
810
820
830
840
850
860
870
880
890
900
910
920
930
940
950
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
IRMN
IRMX
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
THMX_RF
THAV_RF
THNO

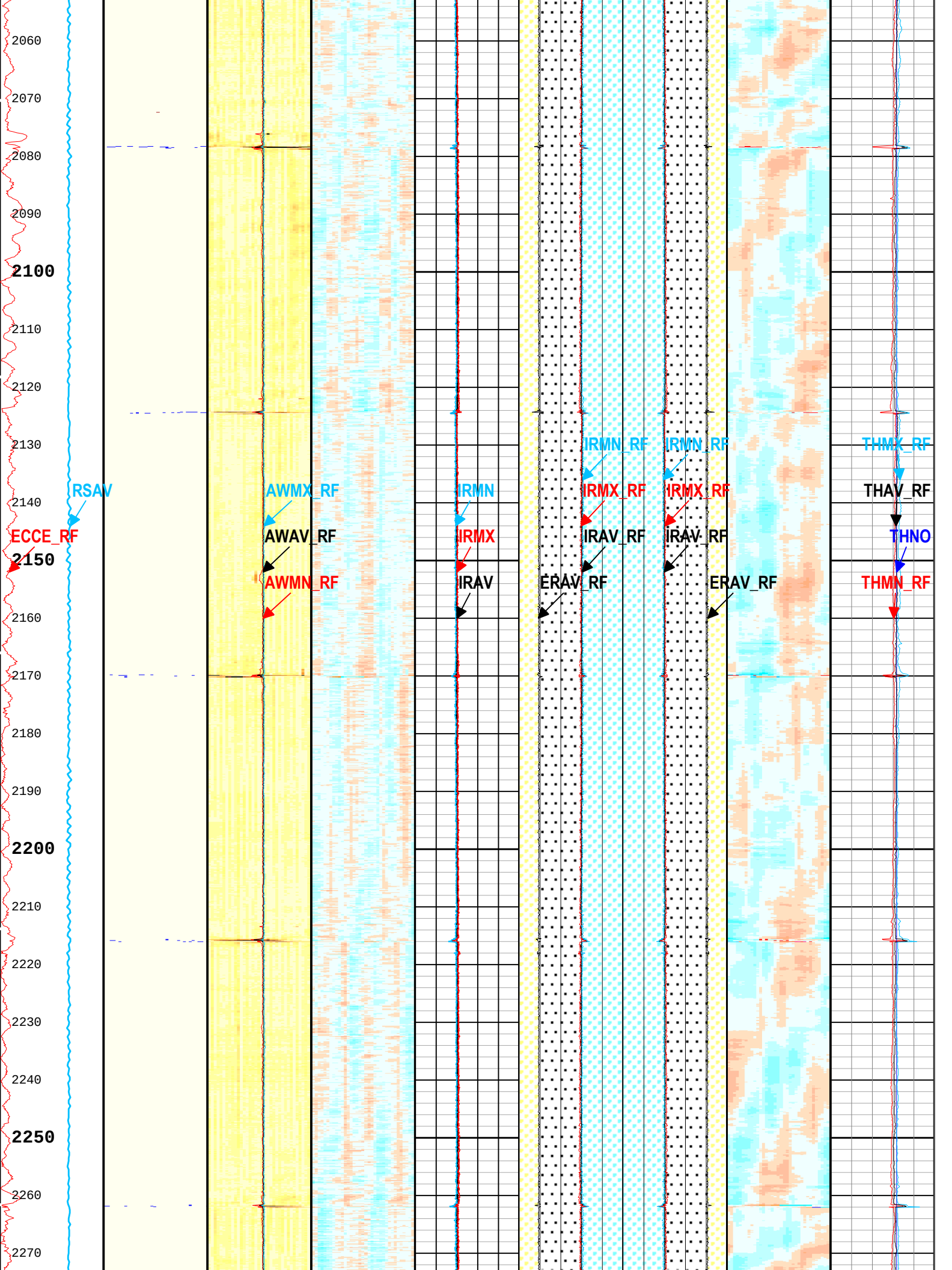

AWMN_RF
IRAV
ERAV_RF
ERAV_RF
THMN_RF
960
970
980
990
1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
IRMN_RF
RMN_RF
THMX_RF

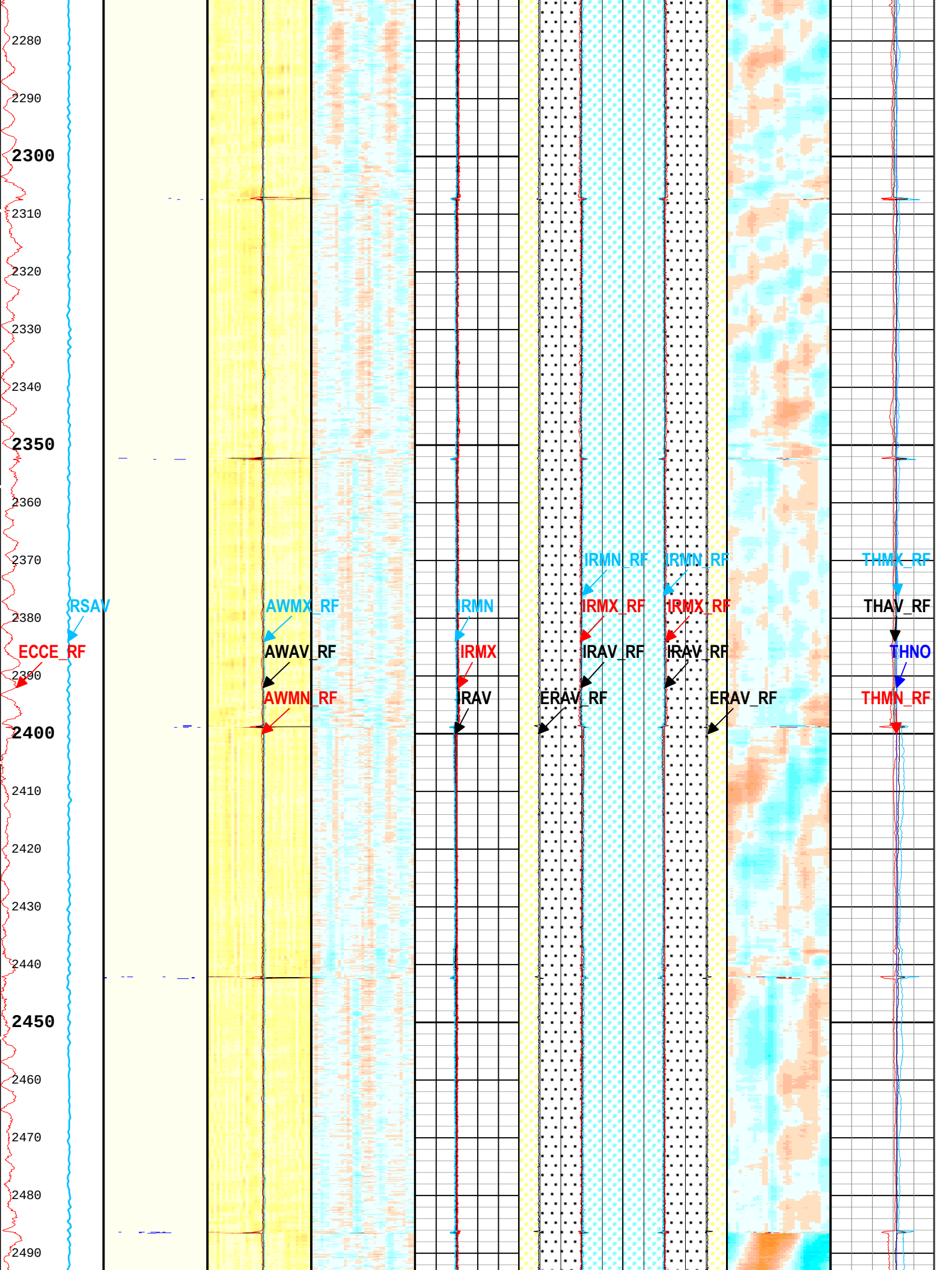

RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMX_RF
IRAV_RF
ERAV_RF
IRMX_RF
IRAV_RF
ERAV_RF
THAV_RF
THNO
THMN_RF
1180
1190
1200
1210
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390

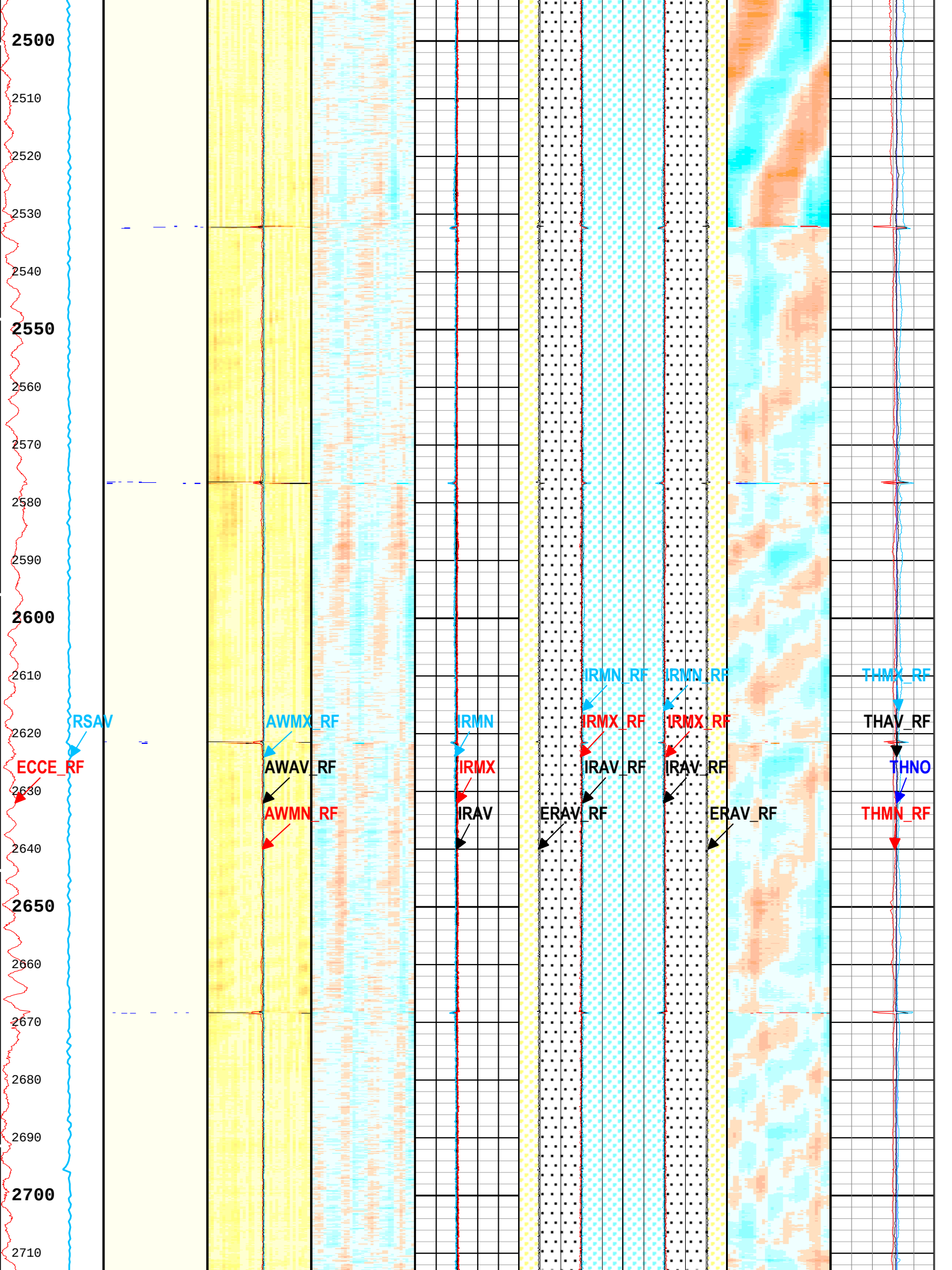

1400
1410
1420
1430
1440
1450
1460
1470
1480
1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

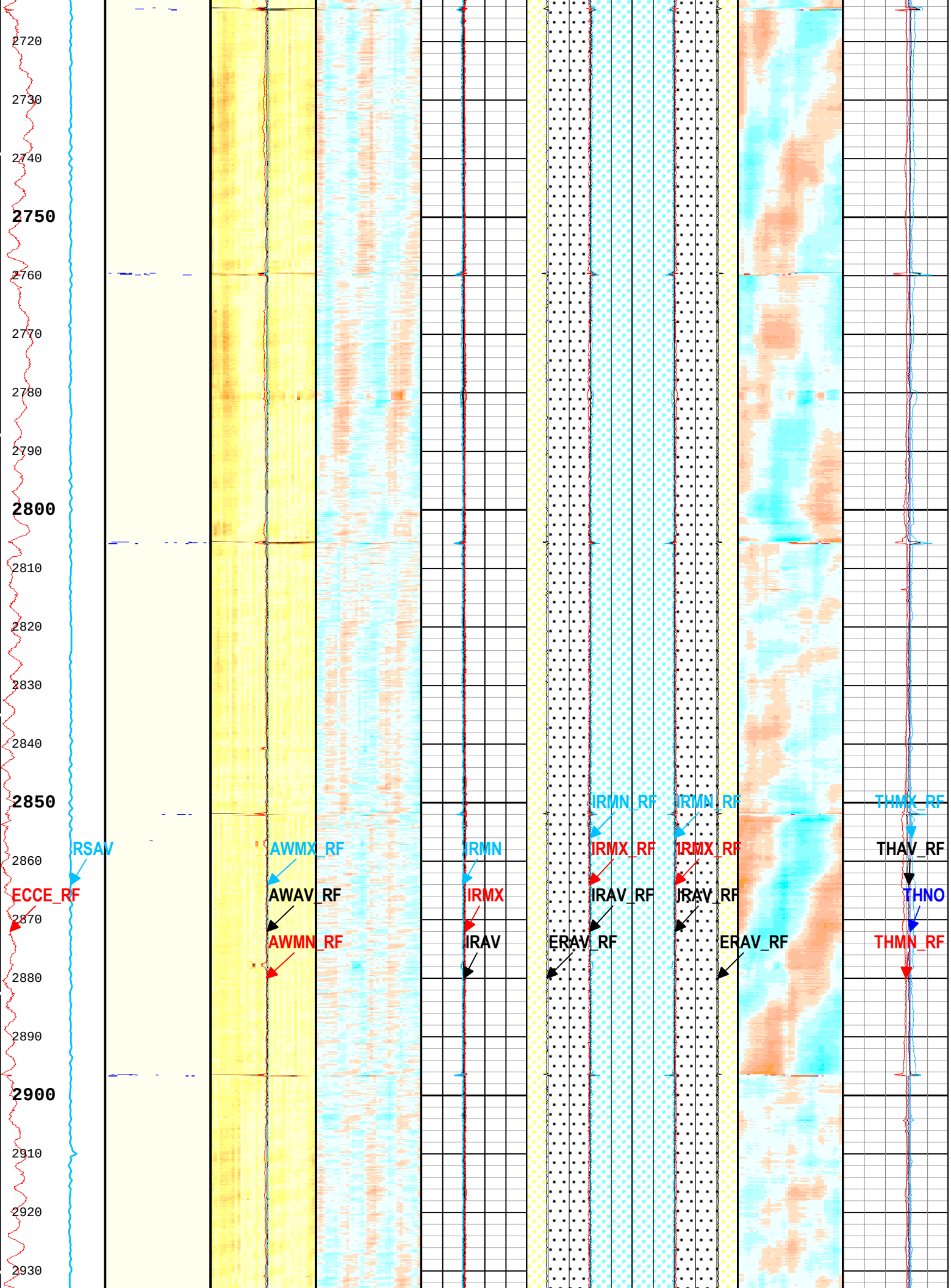

1620
1630
1640
1650
1660
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

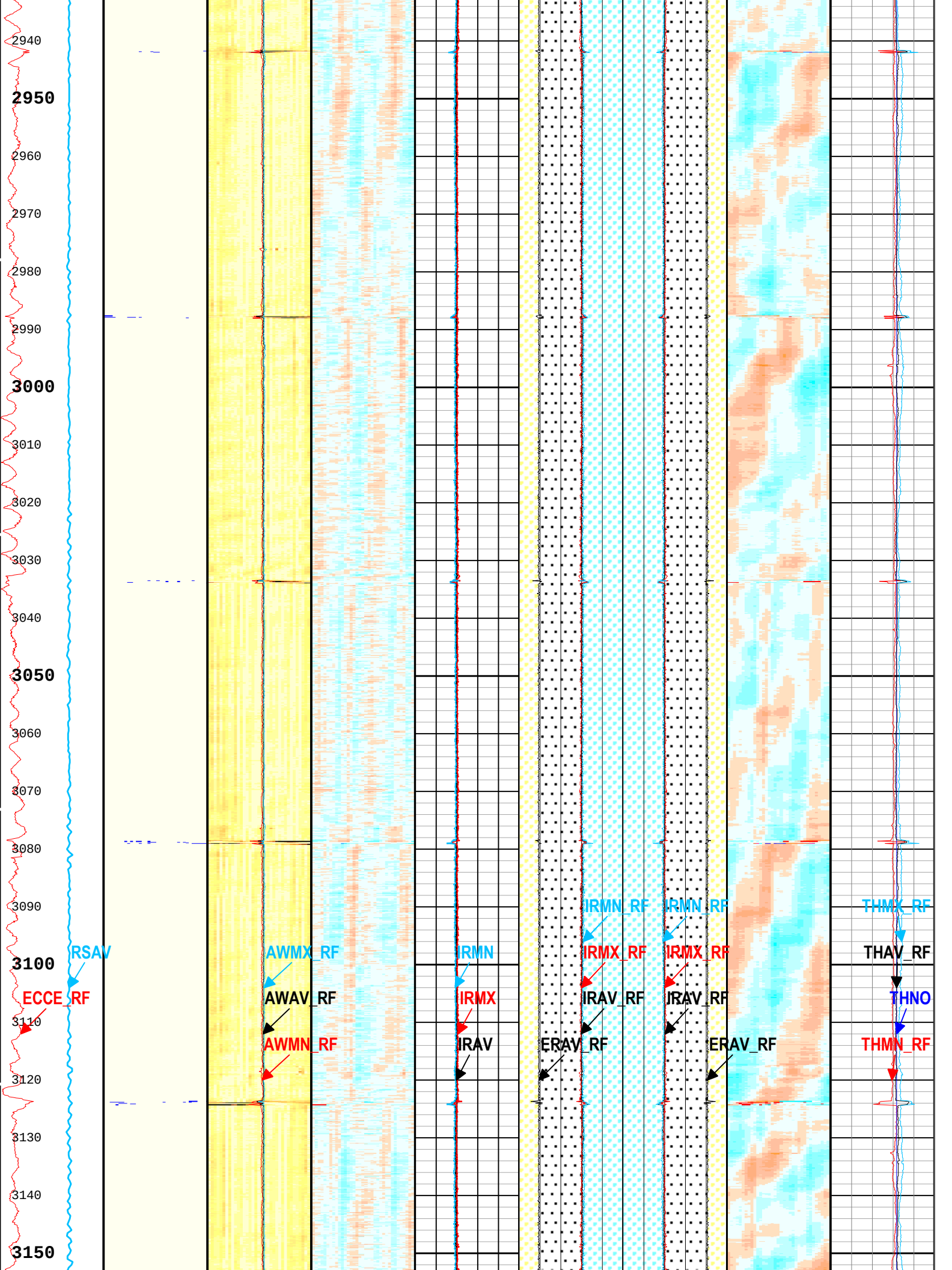

1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

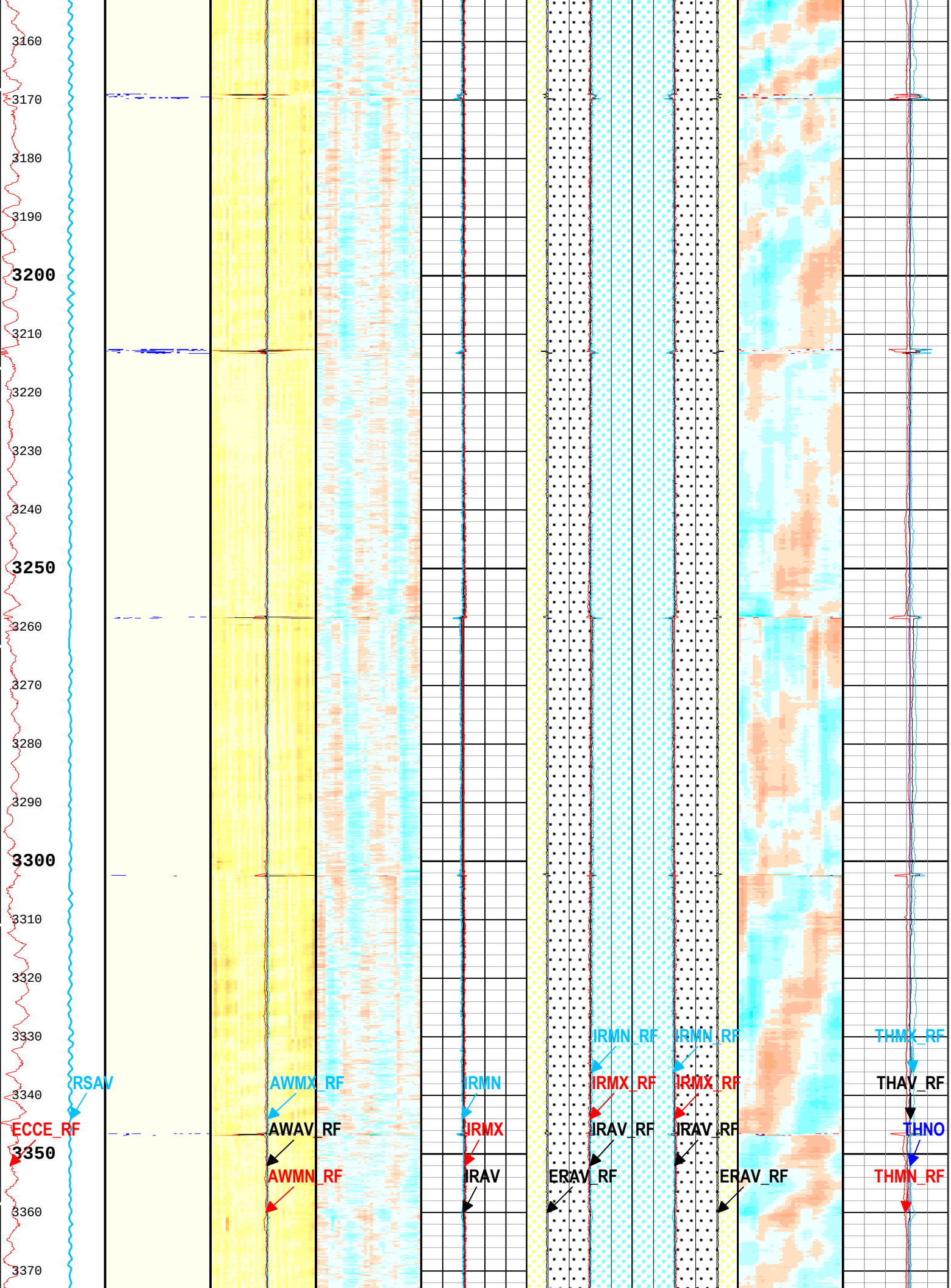

2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

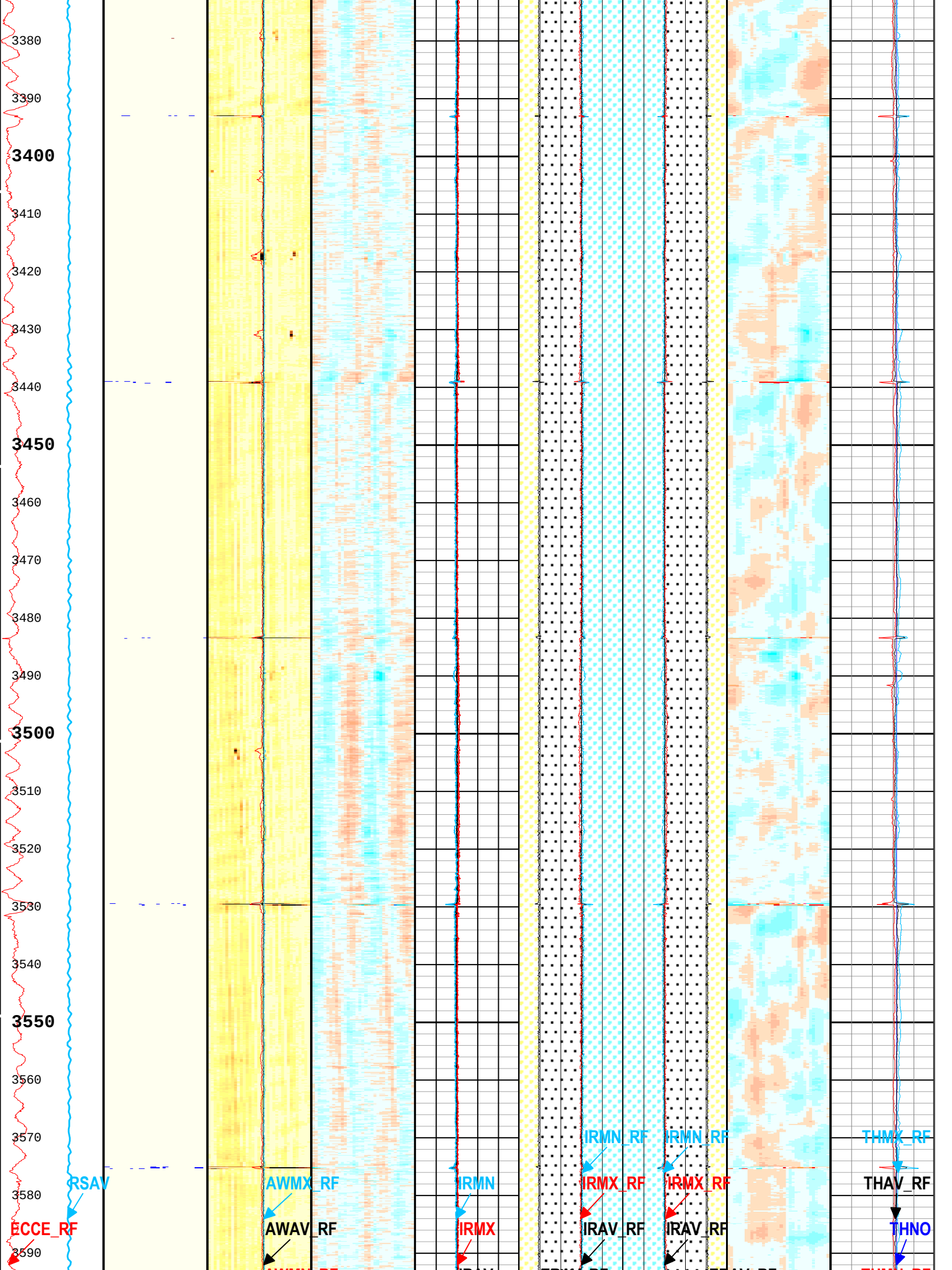

2280
2290
2300
2310
2320
2330
2340
2350
2360
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
2480
2490
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

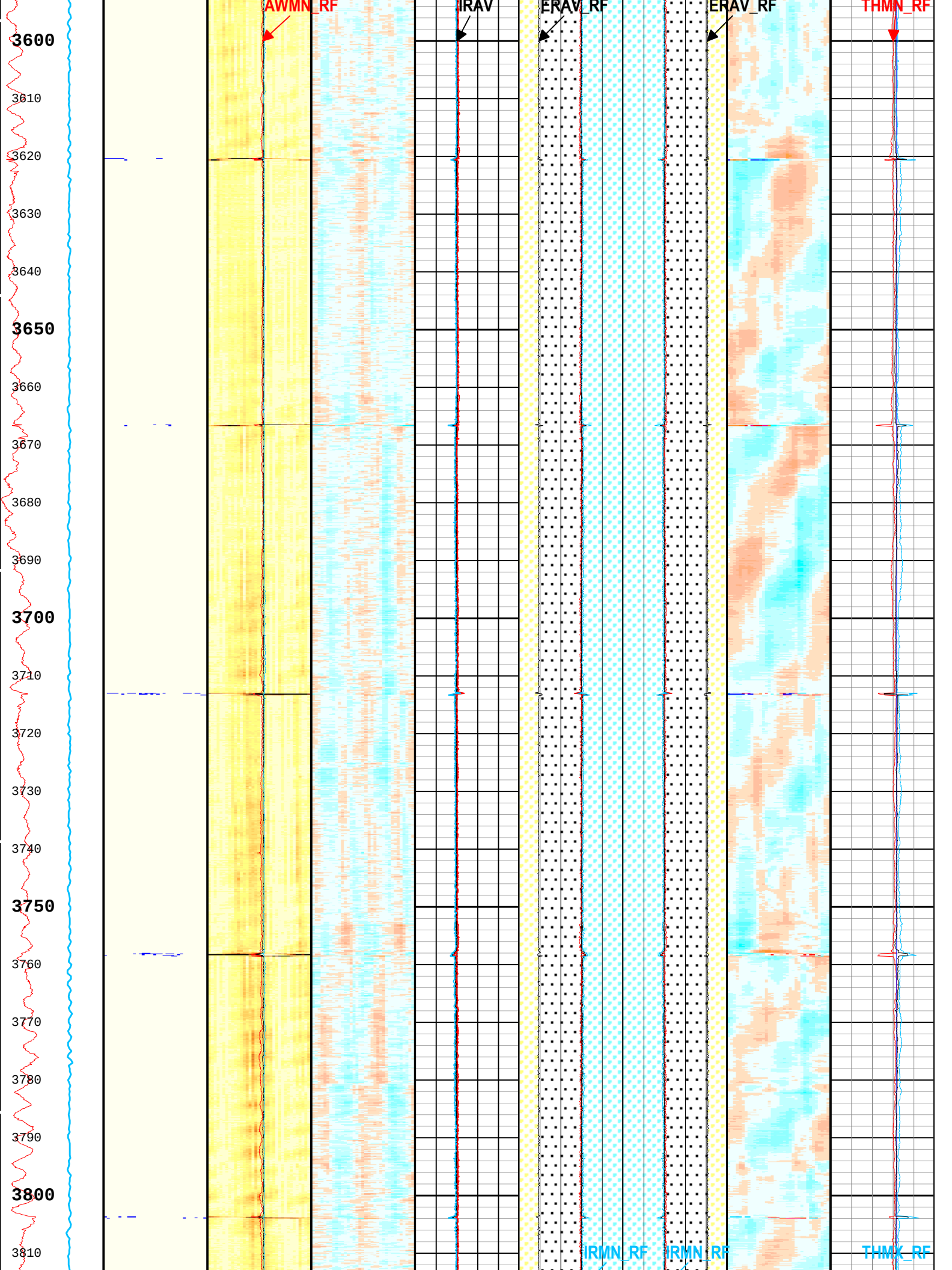

2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630
2640
2650
2660
2670
2680
2690
2700
2710
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

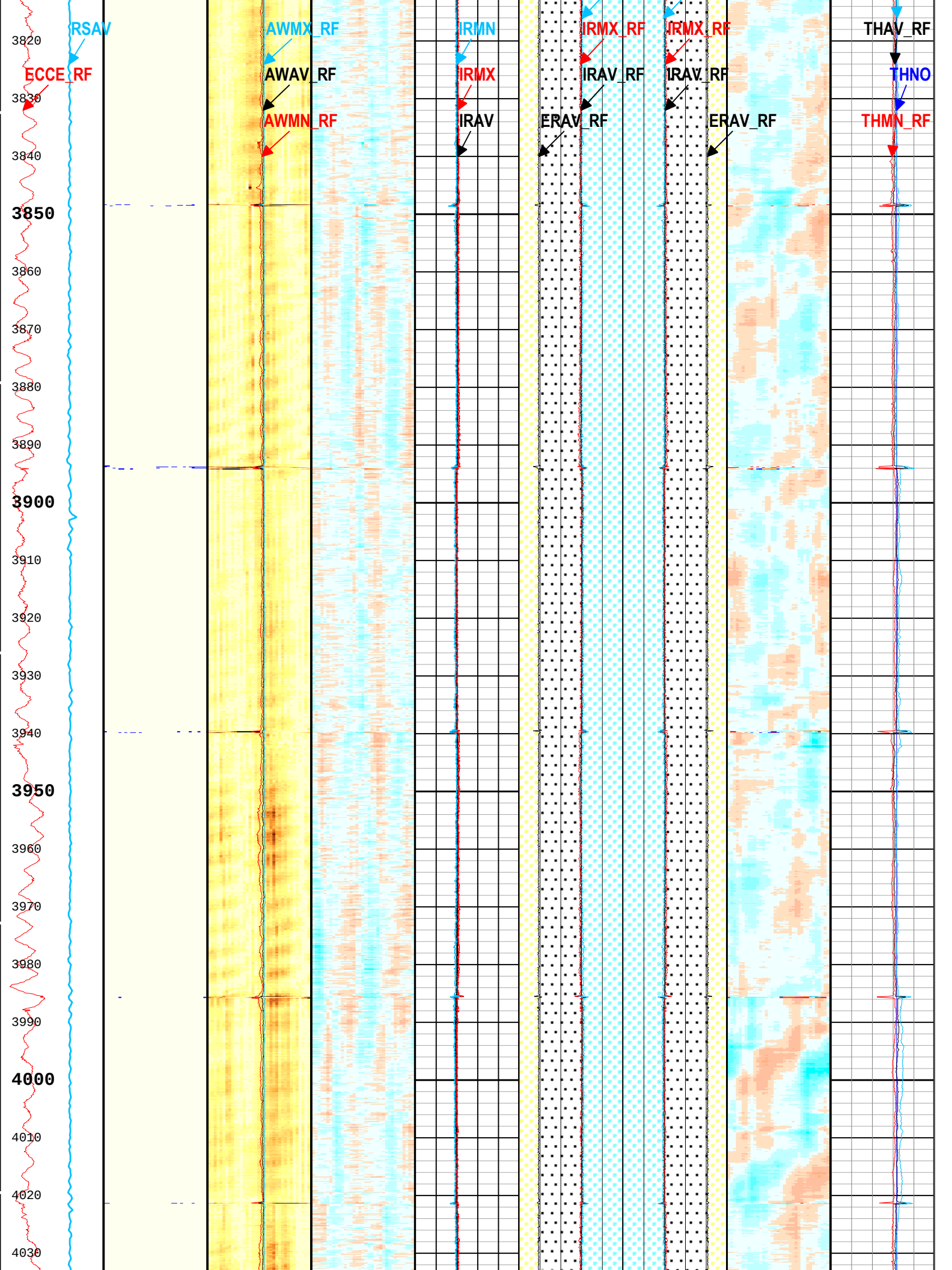

2720
2730
2740
2750
2760
2770
2780
2790
2800
2810
2820
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

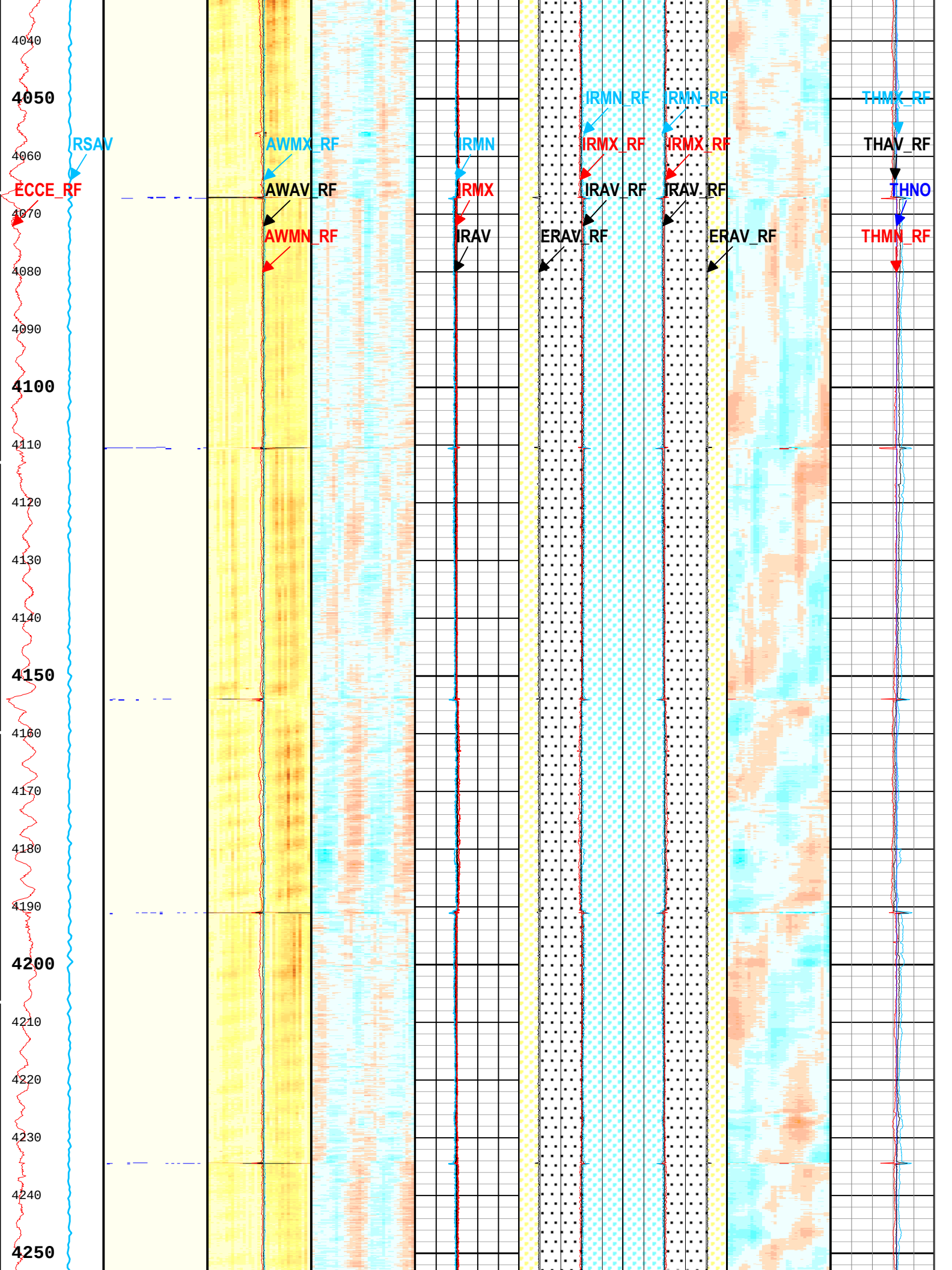

2940
2950
2960
2970
2980
2990
3000
3010
3020
3030
3040
3050
3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

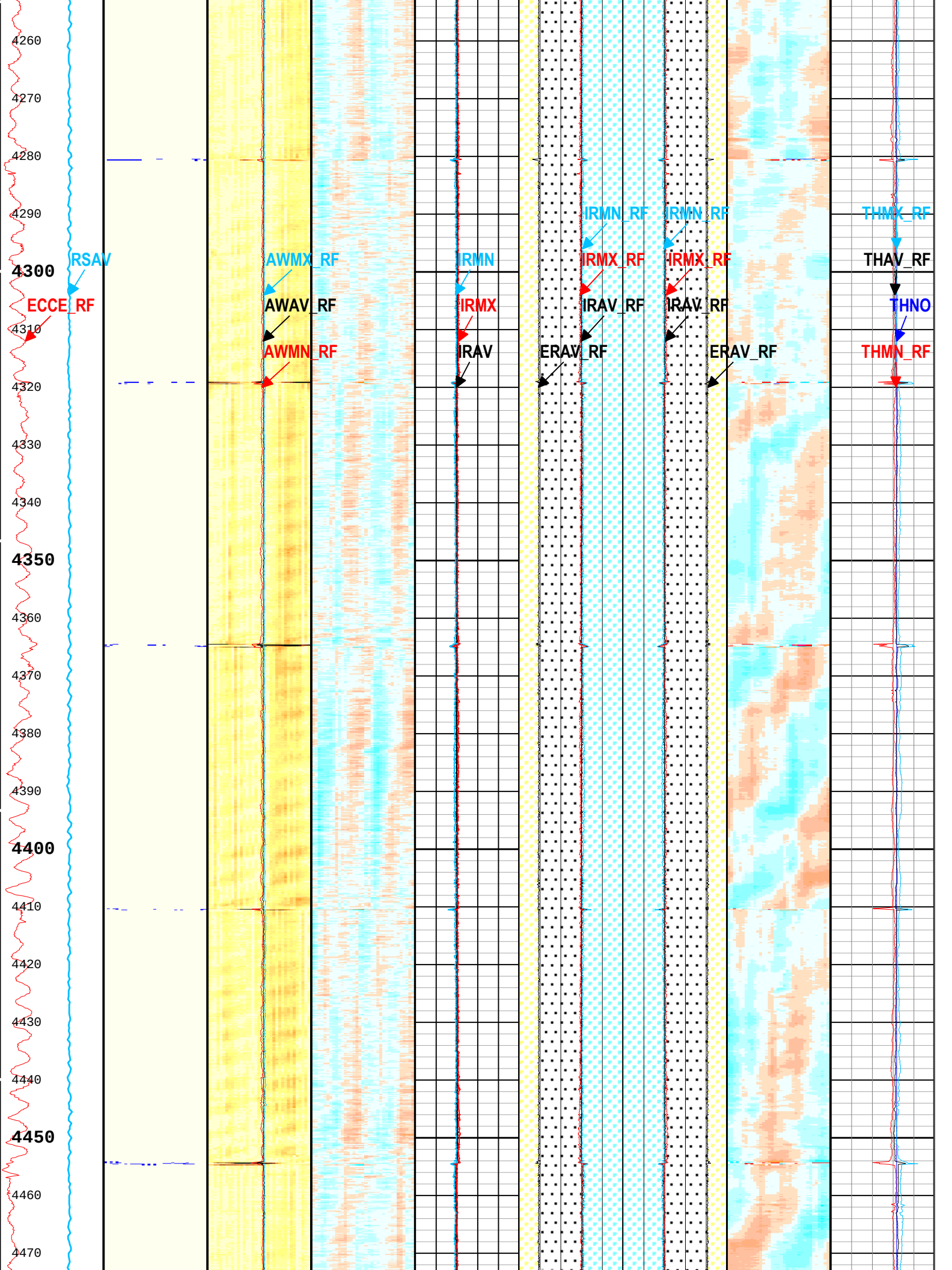

3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260
3270
3280
3290
3300
3310
3320
3330
3340
3350
3360
3370
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

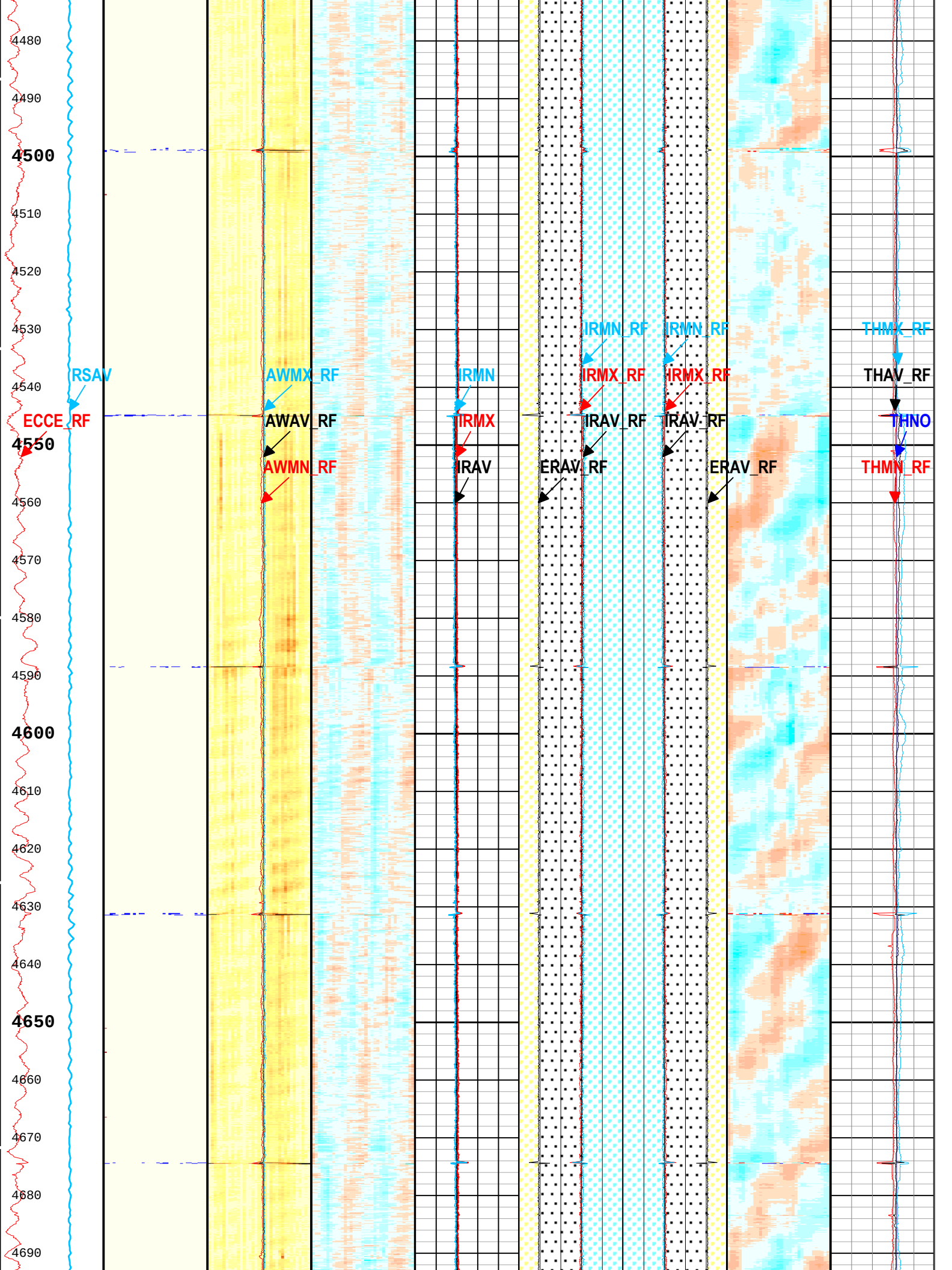

3380
3390
3400
3410
3420
3430
3440
3450
3460
3470
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
3580
3590
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
IRMN
IRMX
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
THMX_RF
THAV_RF
THNO

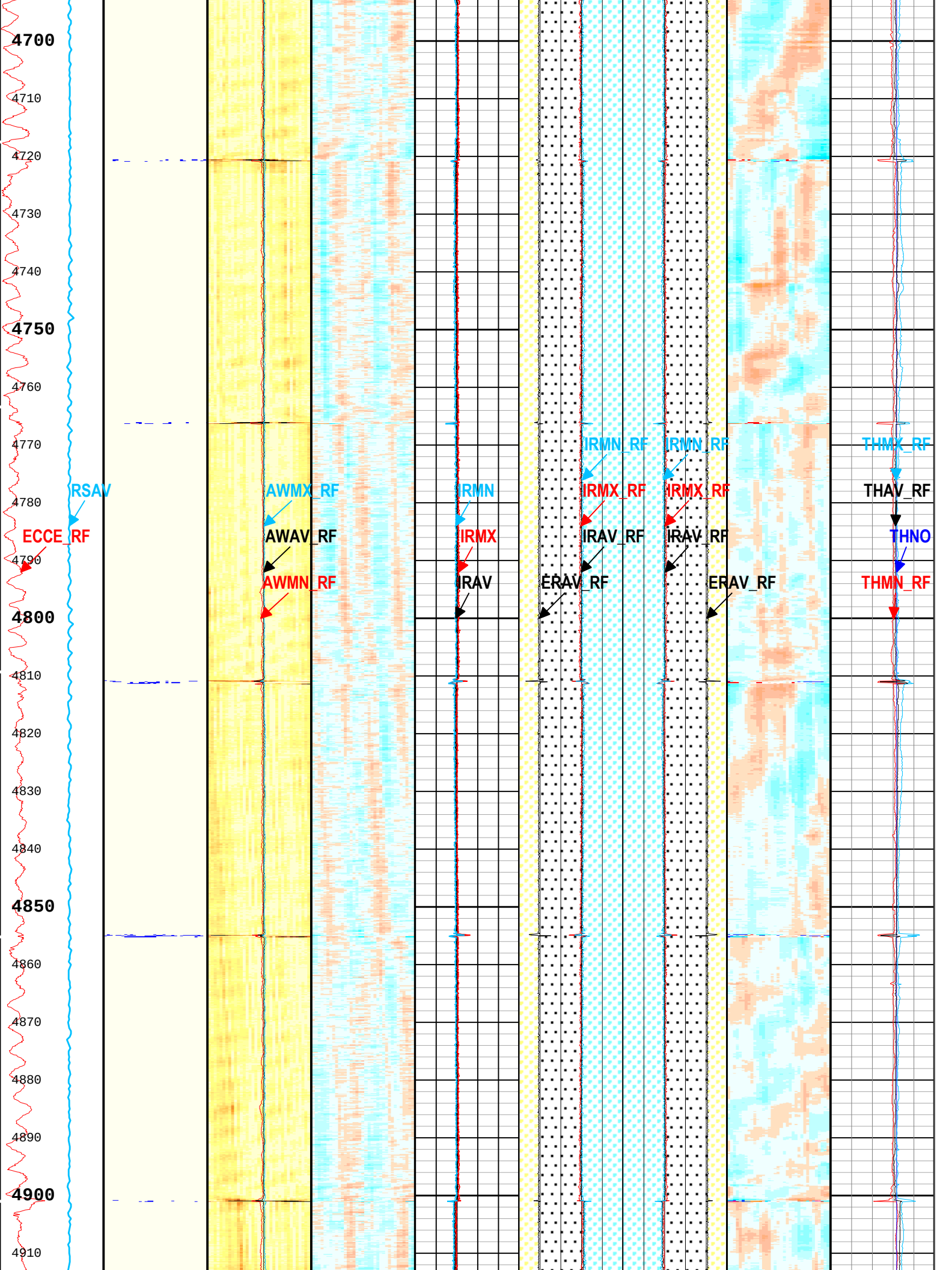

AWMN_RF
IRAV
ERAV_RF
ERAV_RF
THMN_RF
3600
3610
3620
3630
3640
3650
3660
3670
3680
3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
3800
3810
IRMN_RF
IRMN_RF
THMX_RF

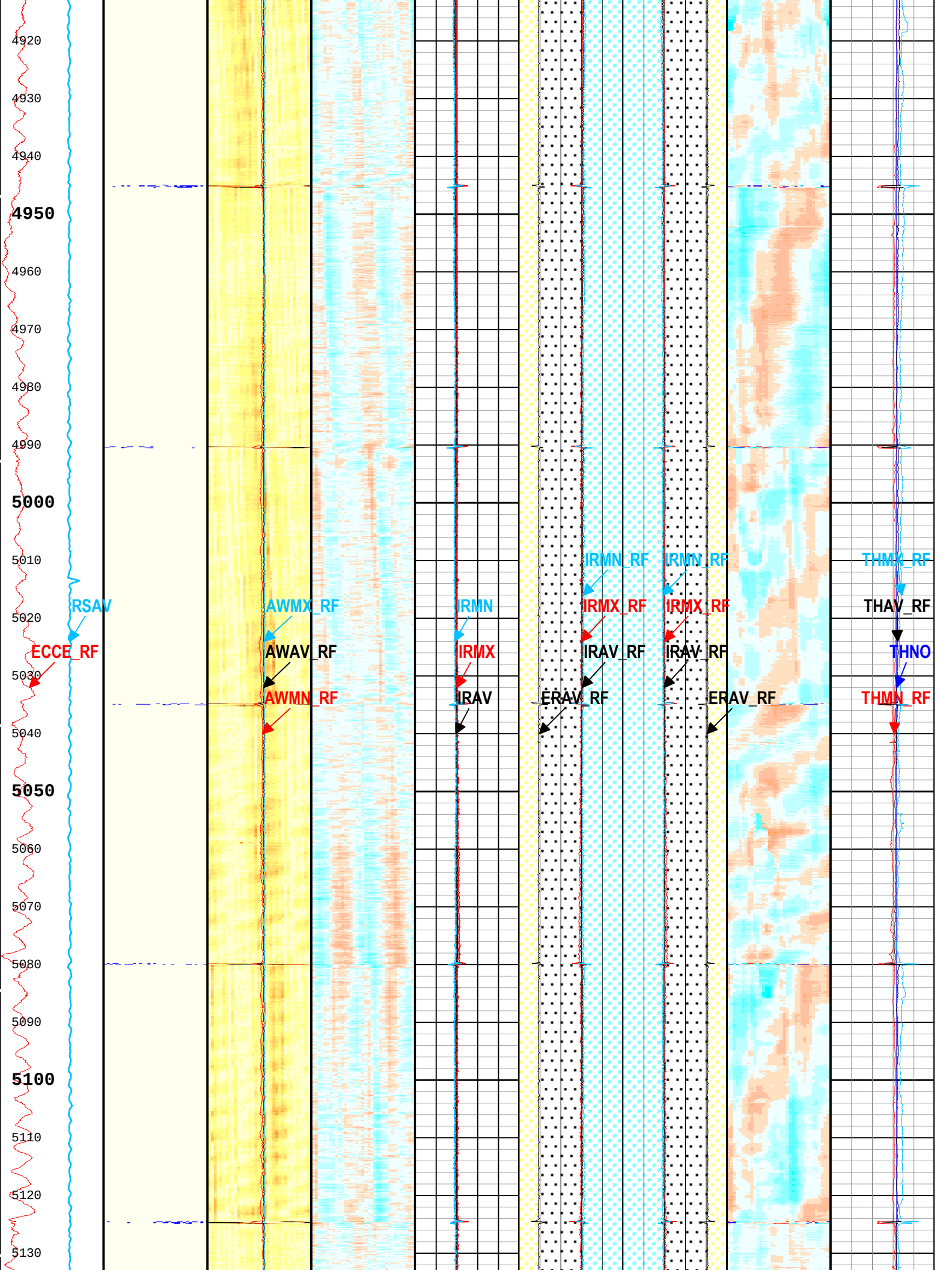

RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMX_RF
IRAV_RF
ERAV_RF
IRMX_RF
IRAV_RF
ERAV_RF
THAV_RF
THNO
THMN_RF
3820
3830
3840
3850
3860
3870
3880
3890
3900
3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030

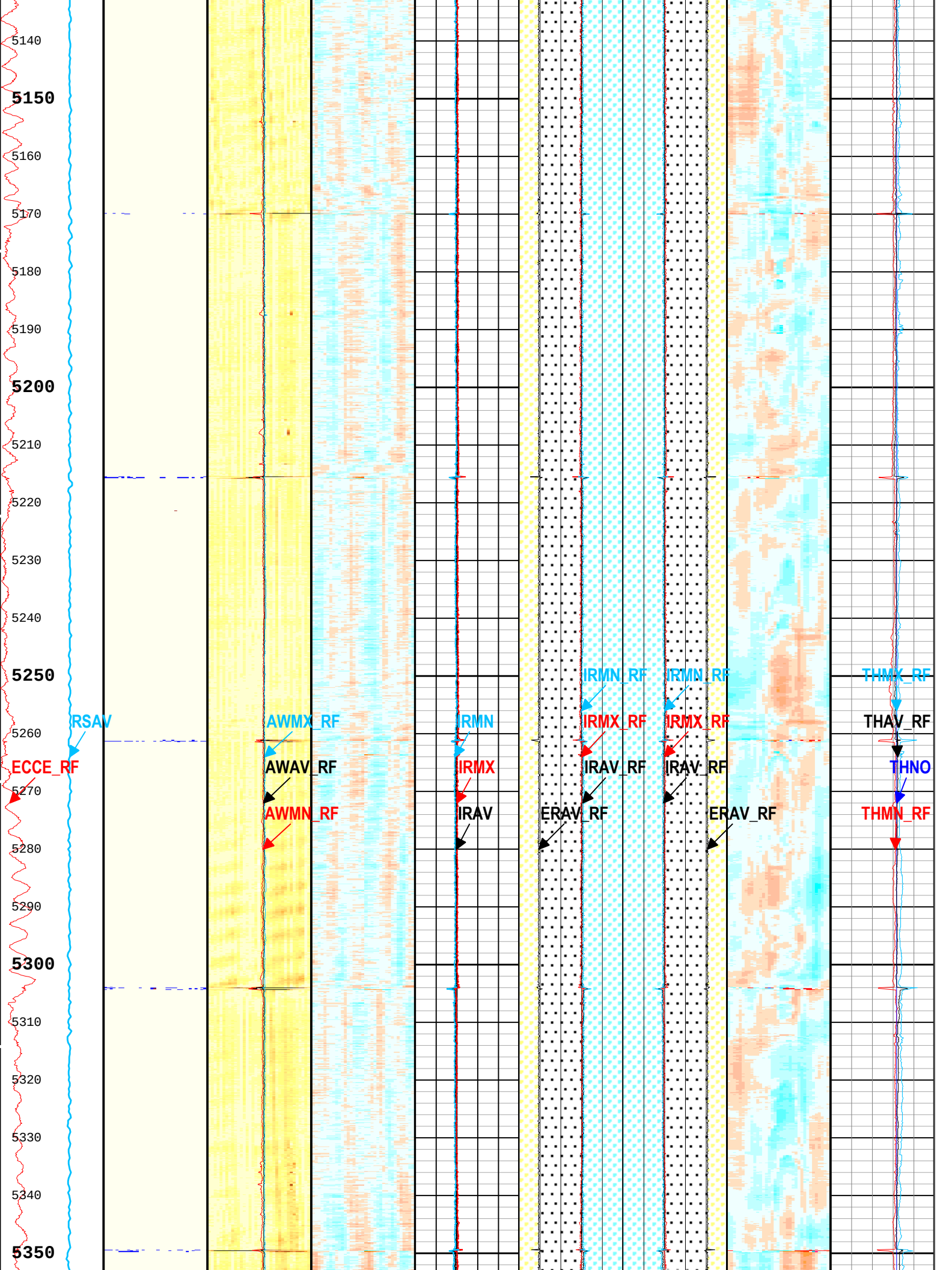

4040
4050
4060
4070
4080
4090
4100
4110
4120
4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

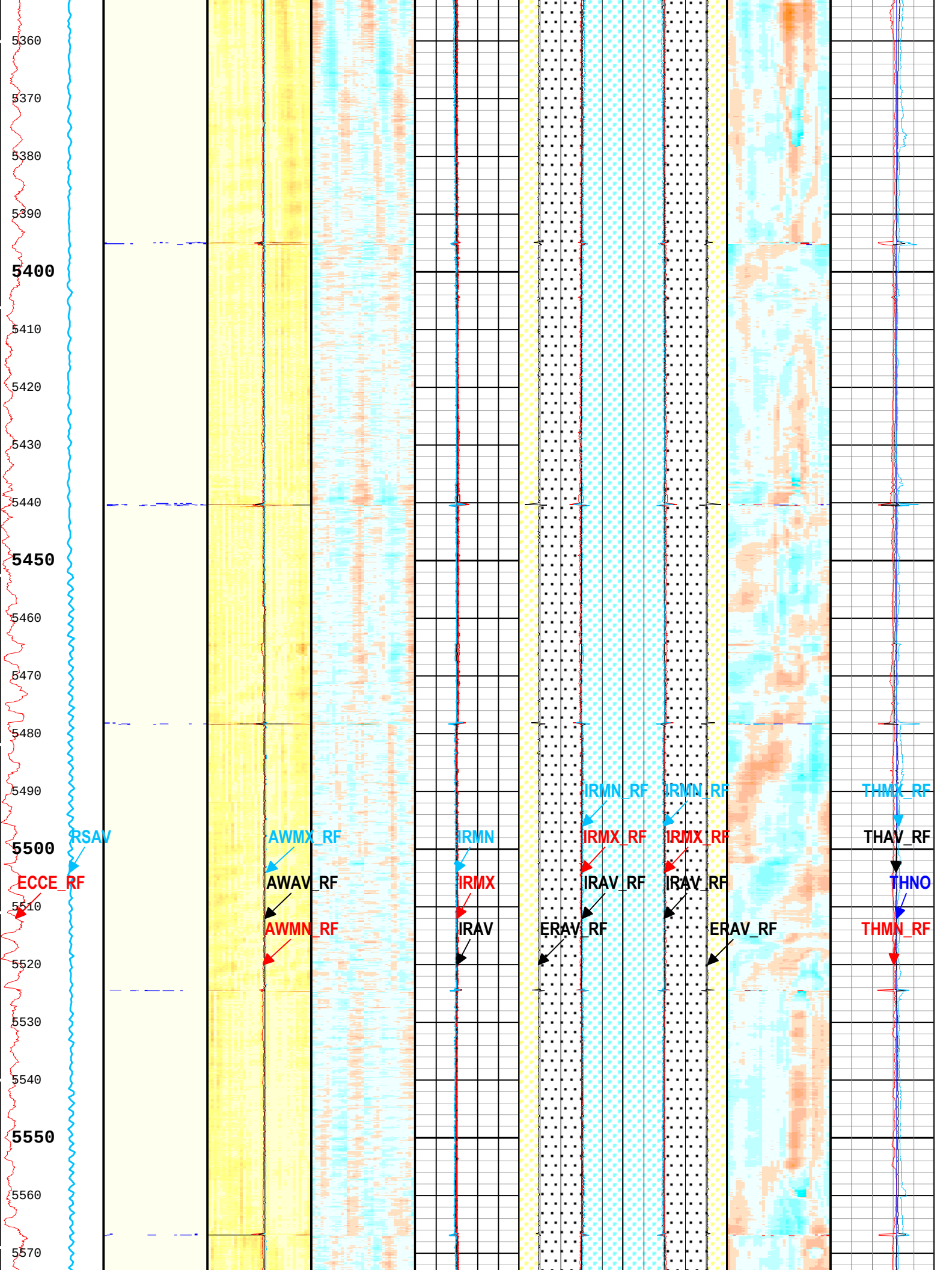

4260
4270
4280
4290
4300
4310
4320
4330
4340
4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

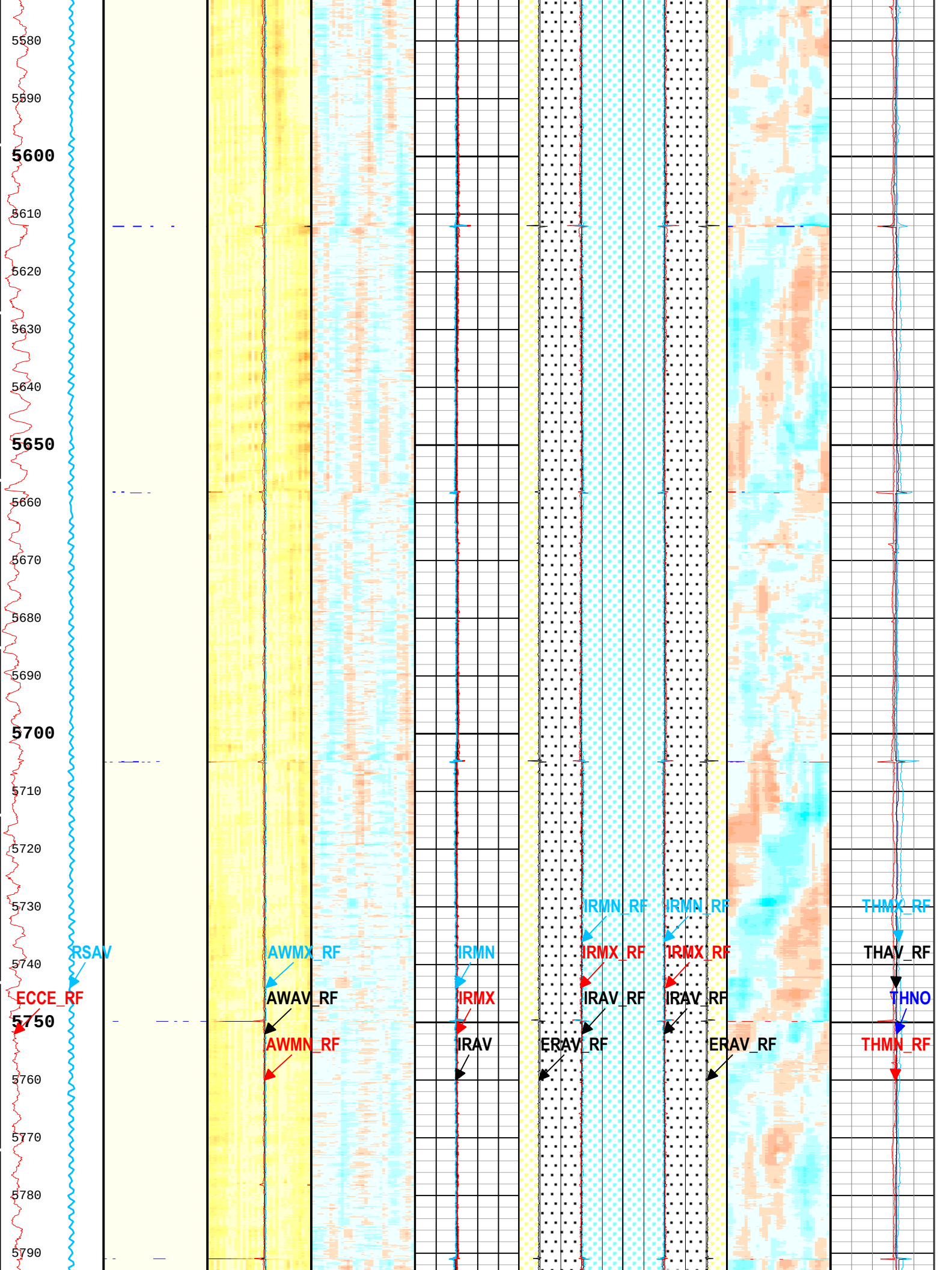

4480
4490
4500
4510
4520
4530
4540
4550
4560
4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

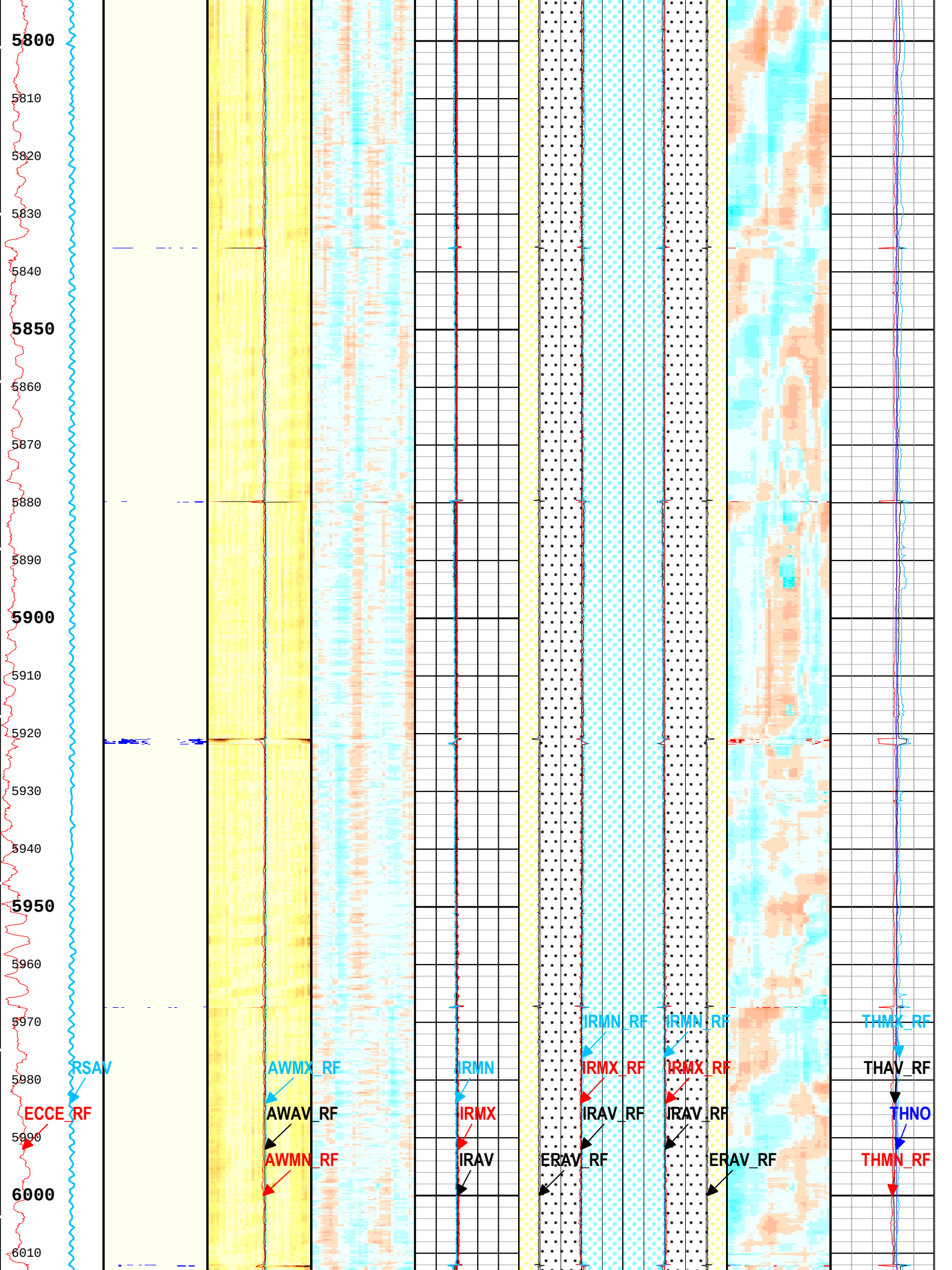

4700
4710
4720
4730
4740
4750
4760
4770
4780
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

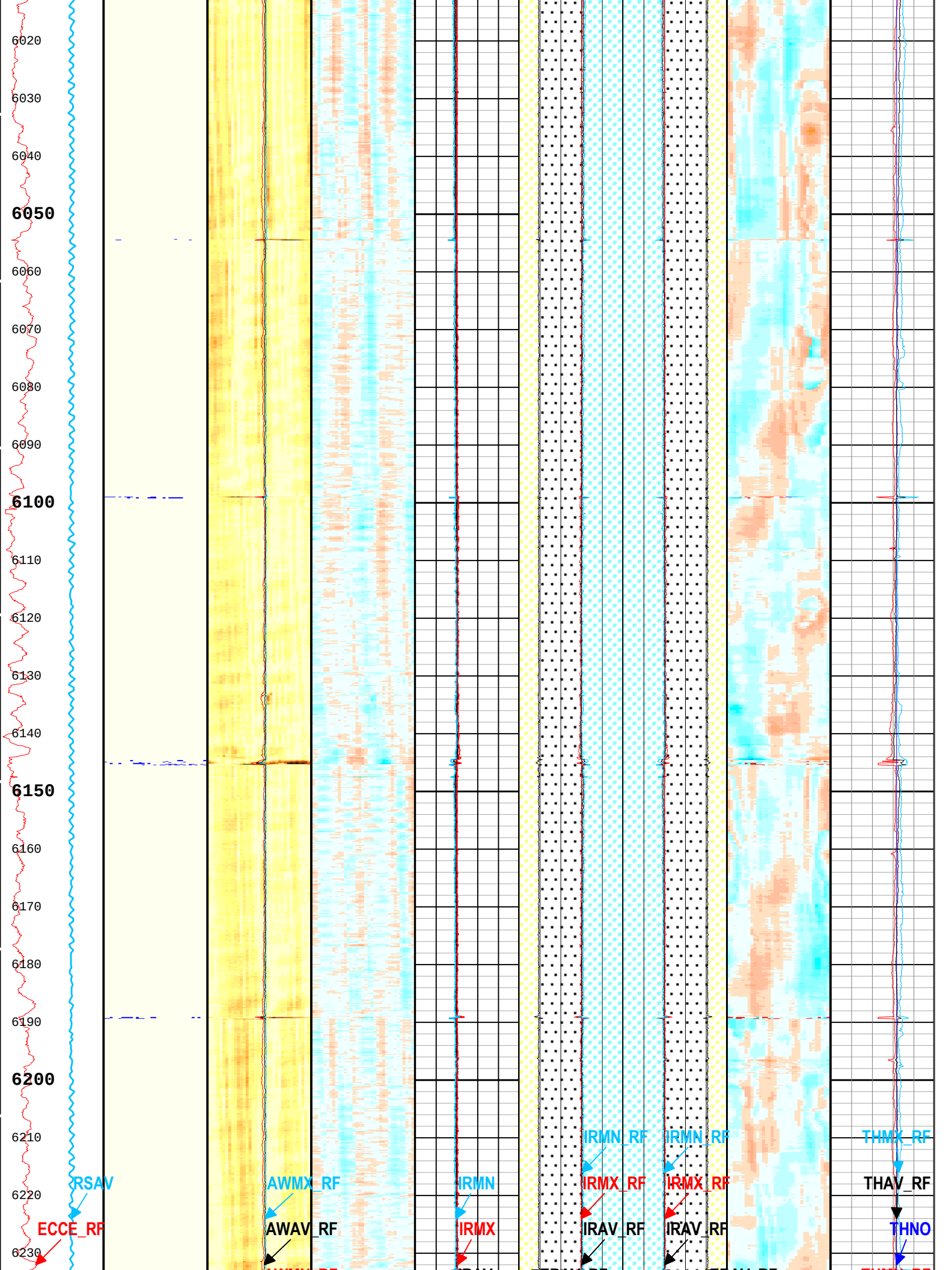

4920
4930
4940
4950
4960
4970
4980
4990
5000
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

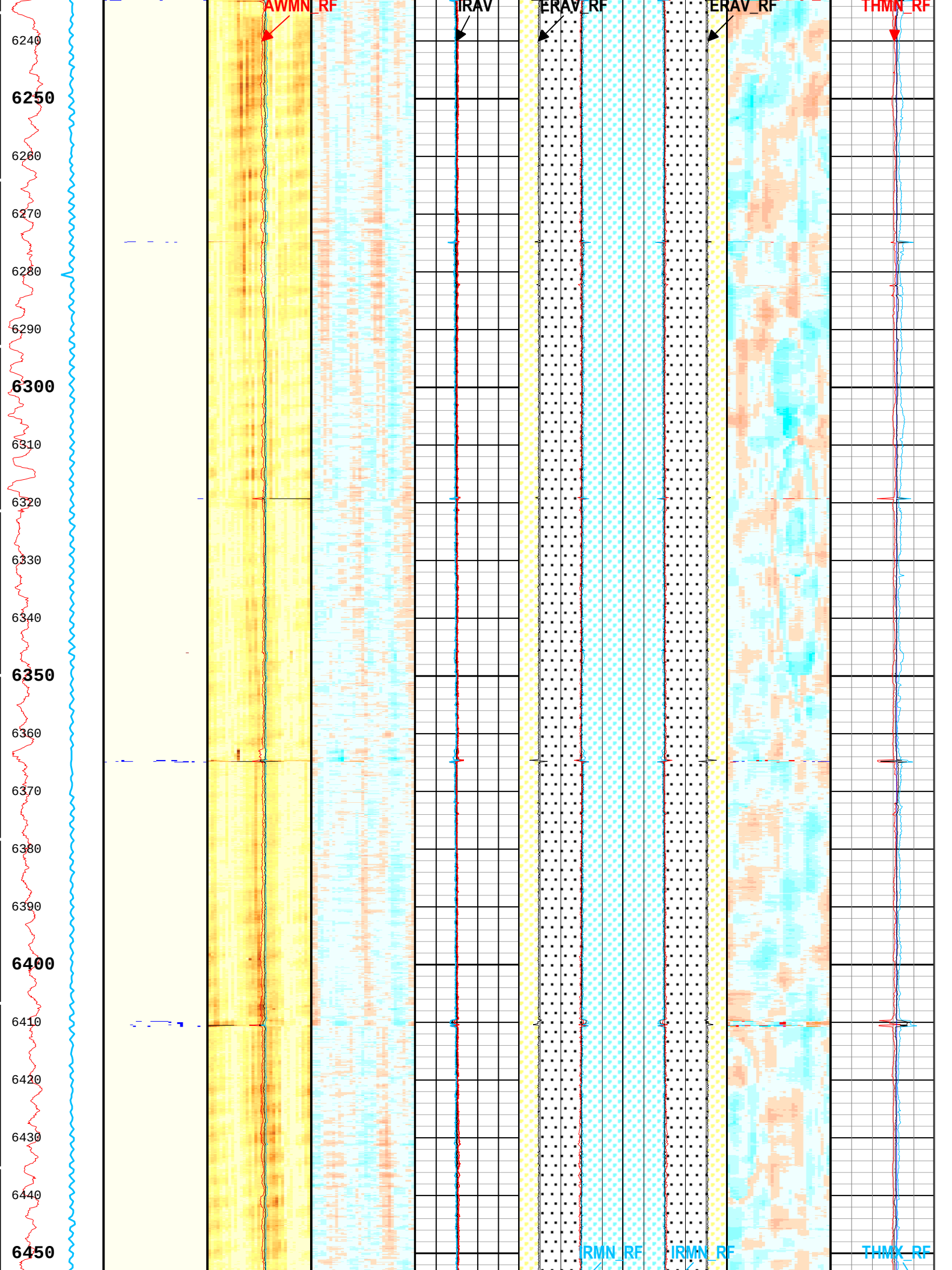

5140
5150
5160
5170
5180
5190
5200
5210
5220
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

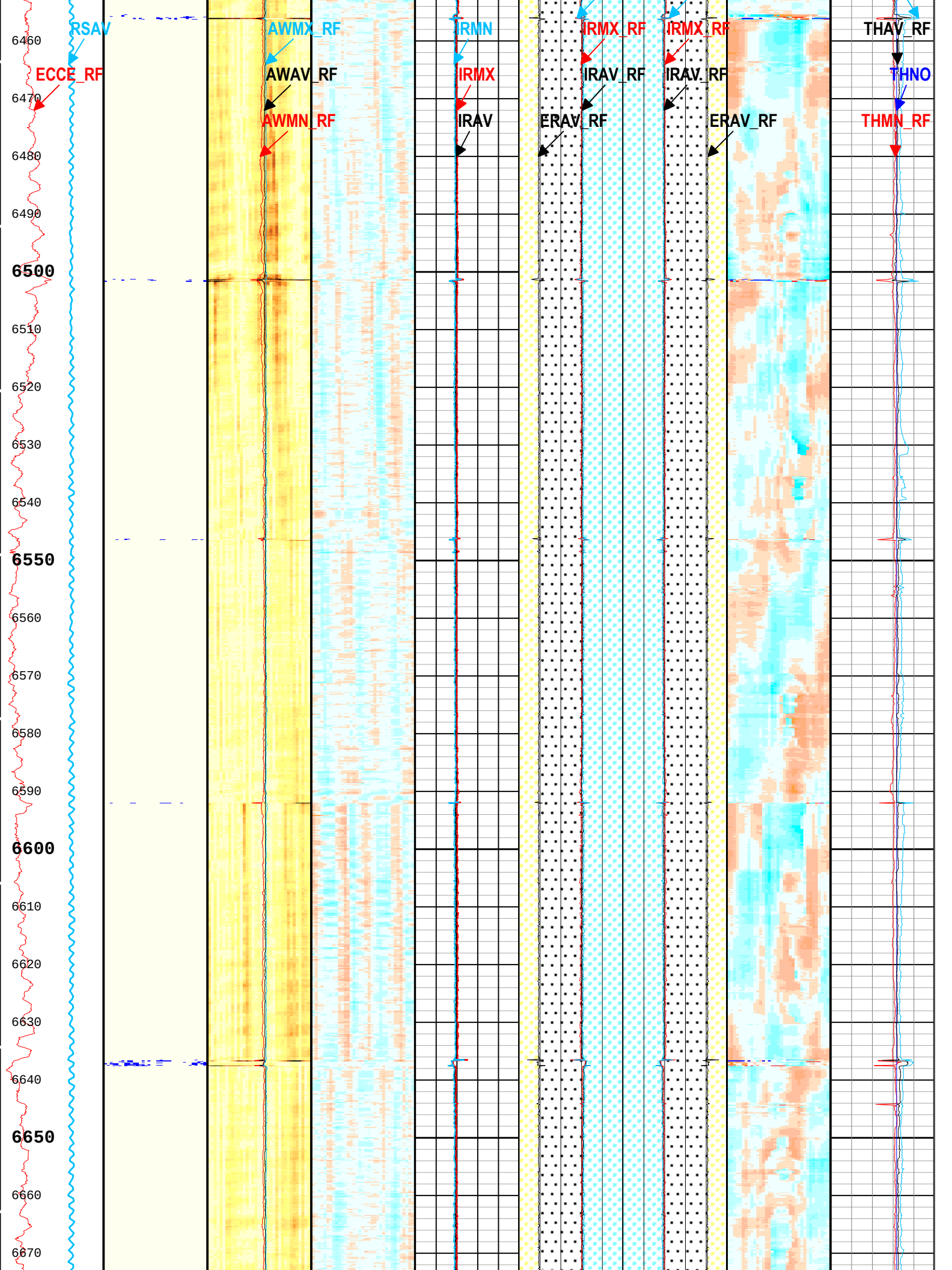

5360
5370
5380
5390
5400
5410
5420
5430
5440
5450
5460
5470
5480
5490
5500
5510
5520
5530
5540
5550
5560
5570
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

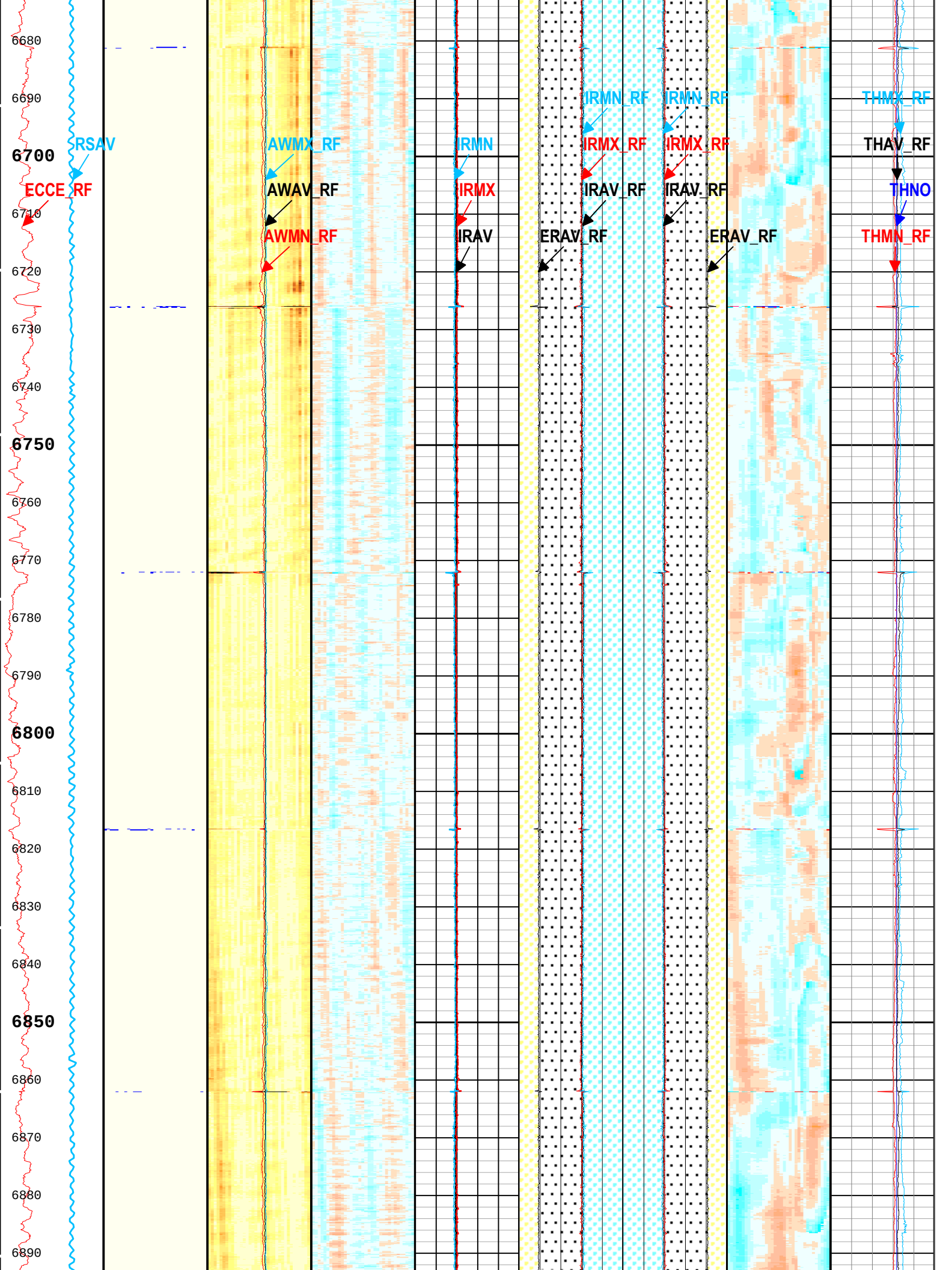

5580
5590
5600
5610
5620
5630
5640
5650
5660
5670
5680
5690
5700
5710
5720
5730
5740
5750
5760
5770
5780
5790
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF

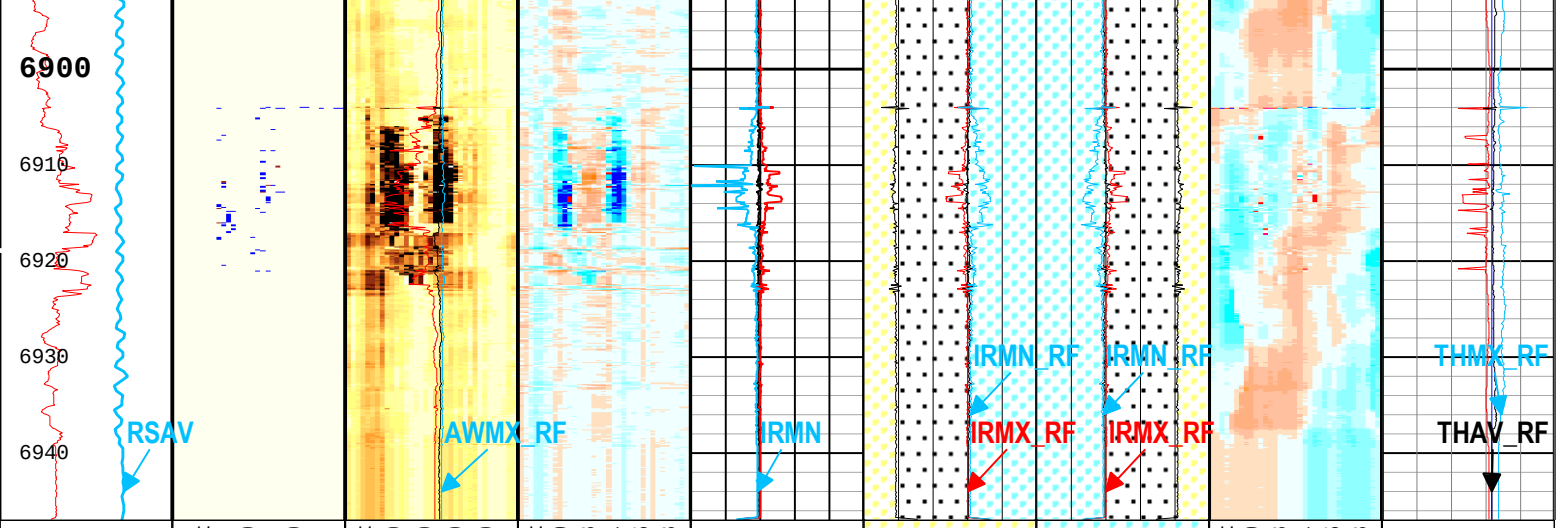

5800
5810
5820
5830
5840
5850
5860
5870
5880
5890
5900
5910
5920
5930
5940
5950
5960
5970
5980
5990
6000
6010
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF


6020
6030
6040
6050
6060
6070
6080
6090
6100
6110
6120
6130
6140
6150
6160
6170
6180
6190
6200
6210
6220
6230
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
IRMN
IRMX
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
THMX_RF
THAV_RF
THNO


AWMN_RF
IRAV
ERAV_RF
ERAV_RF
THMN_RF
6240
6250
6260
6270
6280
6290
6300
6310
6320
6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
6440
6450
RMN_RF
IRMN_RF
THMX_RF


RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMX_RF
IRAV_RF
ERAV_RF
IRMX_RF
IRAV_RF
ERAV_RF
THAV_RF
THNO
THMN_RF
6460
6470
6480
6490
6500
6510
6520
6530
6540
6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
6670


6680
6690
6700
6710
6720
6730
6740
6750
6760
6770
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880
6890
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF



Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E[1]

USIT Processing Flags (UFLG[0]) USIT-E[1]
1 5

Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E[1]
(dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E[1]
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E[1]
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E[1]
0 dB 75

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E[1]
(in)

Internal Radius Averaged Value (IRAV) USIT-E[1]
2.5 in 3.5

Internal Radius Maximum Value (IRMX) USIT-E[1]
2.5 in 3.5

Internal Radius Minimum Value (IRMN) USIT-E[1]
2.5 in 3.5

ERAV | IRAV
ERAV-IRAV | ERAV
IRAV | IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
3.5 in 2.5

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
2.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
3.5 in 2.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
2.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
3.5 in 2.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
2.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.5 in 2.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
2.5 in 3.5

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E[1]
(in)

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E[1]
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E[1]
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E[1]
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E[1]
0.1 in 0.6

USIT Processing Flags (UFLG[0]) USIT-E[1]

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

- UTIM Error
- Pulse Origin Not Detected
- WINLEN Error
- Casing Thickness Error
- Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Corrosion 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jul-2016 09:41:41

ONE

Very Hi_Res Repeat

Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[8]:Up	Up	6776.68 ft	6956.89 ft	19-Jul-2016 12:55:47 PM	19-Jul-2016 1:10:19 PM	ON	16.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:FF-32F (IW 62)

ONE: Log[8]:Up:S006

Description: USI Composite Format: Log (LBV1_USI Corrosion 7inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 20-Jul-2016 09:42:21

TIME_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - :	UTIM Error
2 - UFLG 2 Value within [1.5 - 2.5] - :	Pulse Origin Not Detected
3 - UFLG 3 Value within [2.5 - 3.5] - :	WINLEN Error
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :	Casing Thickness Error
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :	Loop Processing Error

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV)

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E

USIT Processing Flags (UFLG[0])

Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRRKM_RF)

Internal Radius Averaged Value (IRAV) USIT-E
2.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
2.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF)

ERAV | IRAV
ERAV-IRAV | ERAV
IRAV | IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.5 in 2.5

Median of Unflagged External Radii (ERAV_RF) USIT-E
2.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.5 in 2.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
2.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 2.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
2.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF)

Minimum of Unflagged Internal Radii (IRMN_RF)

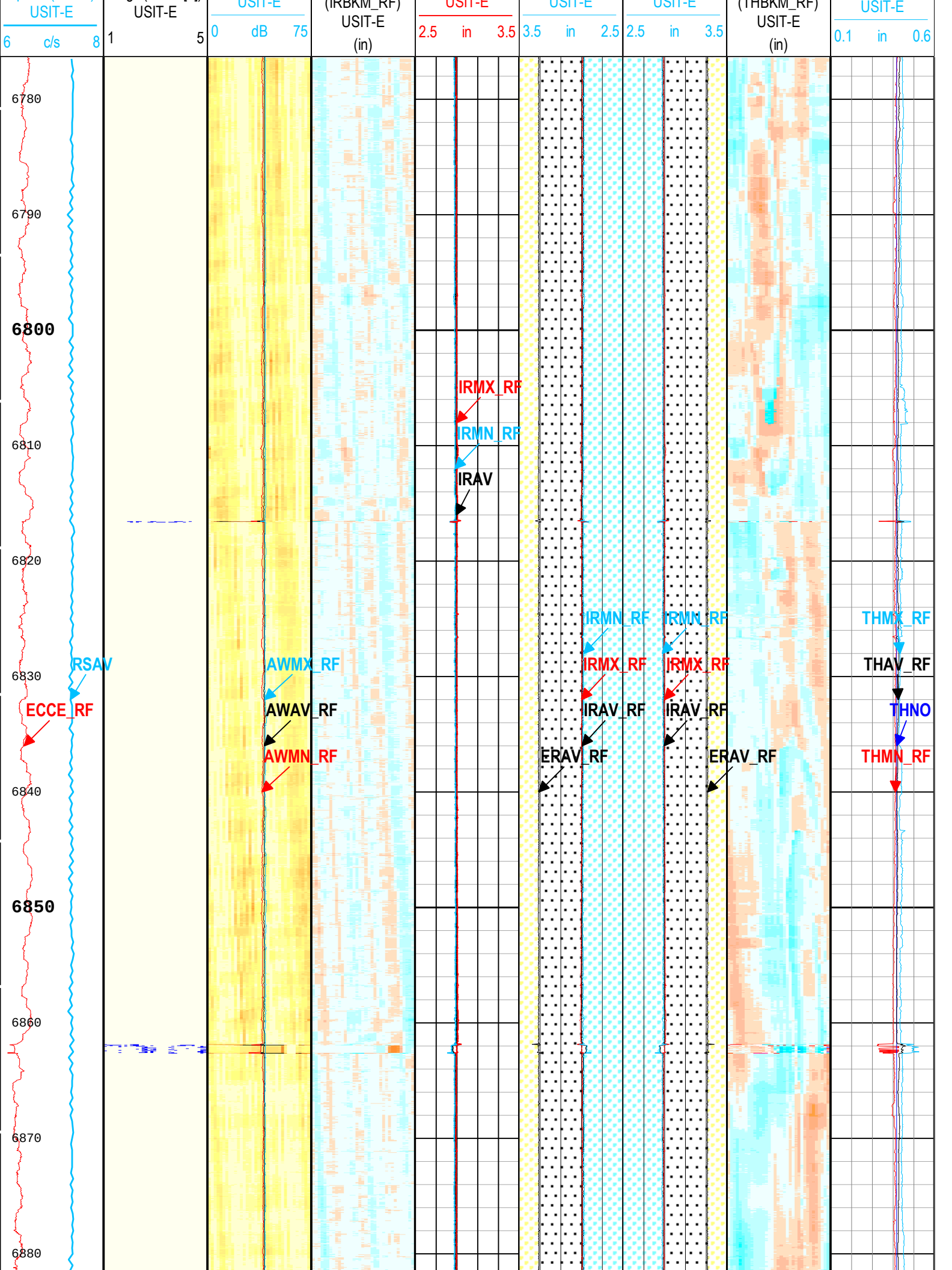
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THRKM_RF)

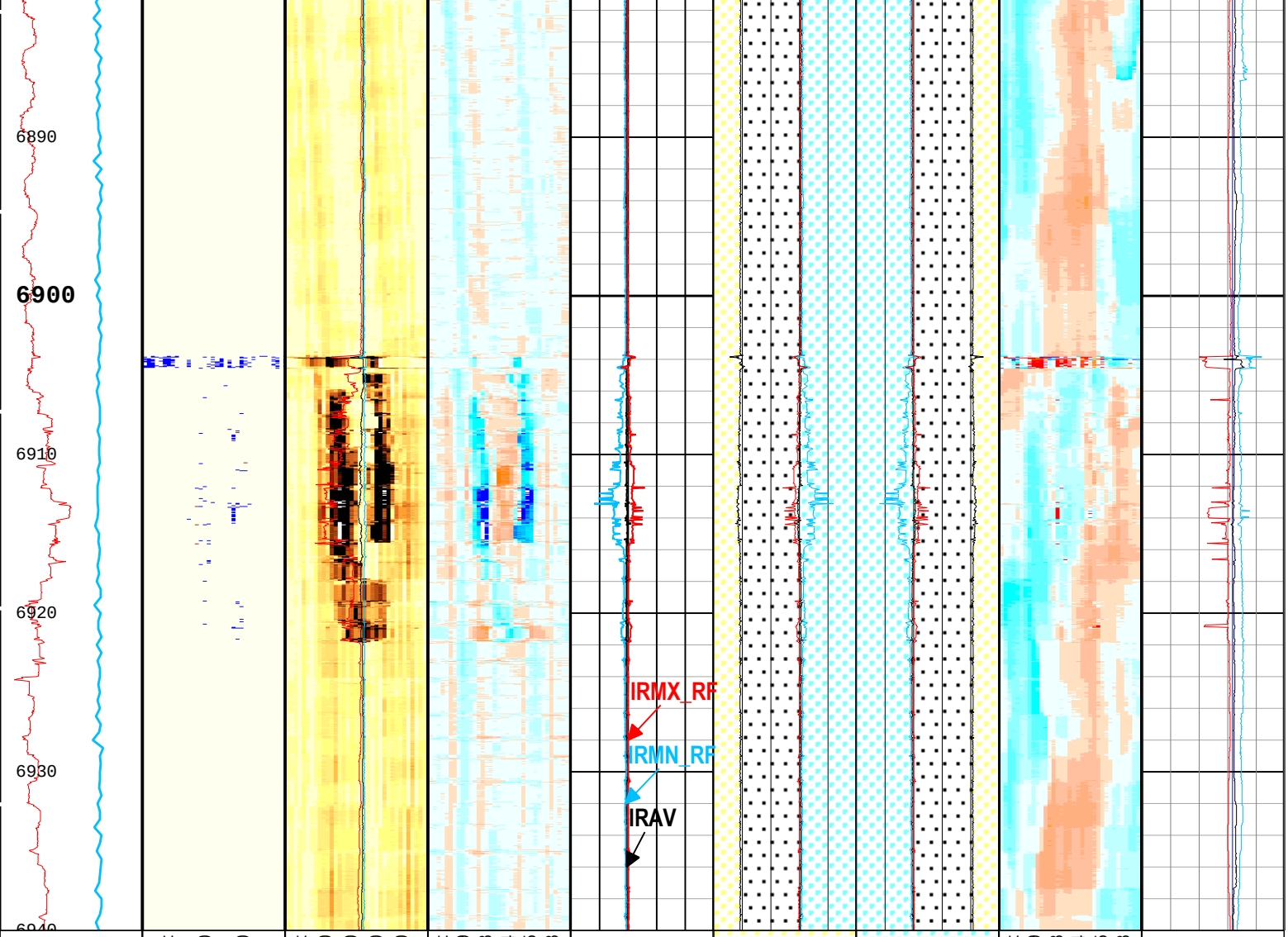
Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF)


USIT-E
6 c/s 8
USIT-E
1 5
USIT-E
0 dB 75
(IRBKM_RF)
USIT-E
(in)
USIT-E
2.5 in 3.5
USIT-E
3.5 in 2.5
USIT-E
2.5 in 3.5
(THBKM_RF)
USIT-E
(in)
USIT-E
0.1 in 0.6
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880
RSAV
ECCE_RF
AWMX_RF
AWAV_RF
AWMN_RF
IRMX_RF
IRMN_RF
IRAV
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF



Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E
6 c/s 8

Absent 1.500 3.500

Explicit Normalization

USIT - USIT Processing Flags (UFLG) USIT-E

USIT Processing Flags (UFLG[0]) USIT-E
1 5

Absent -5.200 -3.600 -2.000 -0.400

Explicit Normalization

USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude

Absent -0.059 -0.028 0.004 0.035 0.068

Explicit Normalization

USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E (in)

Internal Radius Averaged Value (IRAV) USIT-E
2.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
2.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
2.5 in 3.5

ERAV | IRAV

ERAV-IRAV | ERAV

IRAV | IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.5 in 2.5

Median of Unflagged External Radii (ERAV_RF) USIT-E
2.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.5 in 2.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
2.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.5 in 2.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
2.5 in 3.5

Absent -0.059 -0.028 0.004 0.035 0.068

Explicit Normalization

USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E (in)

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6

(AWMX_RF) USIT-E	Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E	Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
0 dB 75	3.5 in 2.5	2.5 in 3.5

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - :	UTIM Error
2 - UFLG 2 Value within [1.5 - 2.5] - :	Pulse Origin Not Detected
3 - UFLG 3 Value within [2.5 - 3.5] - :	WINLEN Error
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :	Casing Thickness Error
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :	Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Corrosion 7inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 20-Jul-2016 09:42:21

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WLSESSION	11	in
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.417	in
CYSTLGR	Casing Yield Strength - Zoned along logger depths	WLSESSION	80000	psi
DFD	Drilling Fluid Density	Borehole	8.6	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	26.07	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.06	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
ZMUD	Acoustic Impedance of Mud	Borehole	1.48	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	32	V

HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 0.6 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	6940	ft
VRES	Vertical Resolution	USIT-E	0.6 in	
WINB	Window Begin Time	USIT-E	30.08	us
WINE	Window End Time	USIT-E	70.08	us

Composite 1

USI Compressed Goodwin

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[7]:Up	Up	85.65 ft	6947.43 ft	19-Jul-2016 9:27:50 AM	19-Jul-2016 12:13:06 PM	ON	7.00 ft	No
ONE	Log[9]:Up	Up	12.53 ft	336.93 ft	19-Jul-2016 1:55:07 PM	19-Jul-2016 2:07:42 PM	ON	17.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:FF-32F (IW 62)

Composite 1:S006

Description: USI Goodwin Format: Log (Import of USI Goodwin) Index Scale: 0.1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jul-2016 09:42:27

TIME_1900 - Time Marked every 60.00 (s)

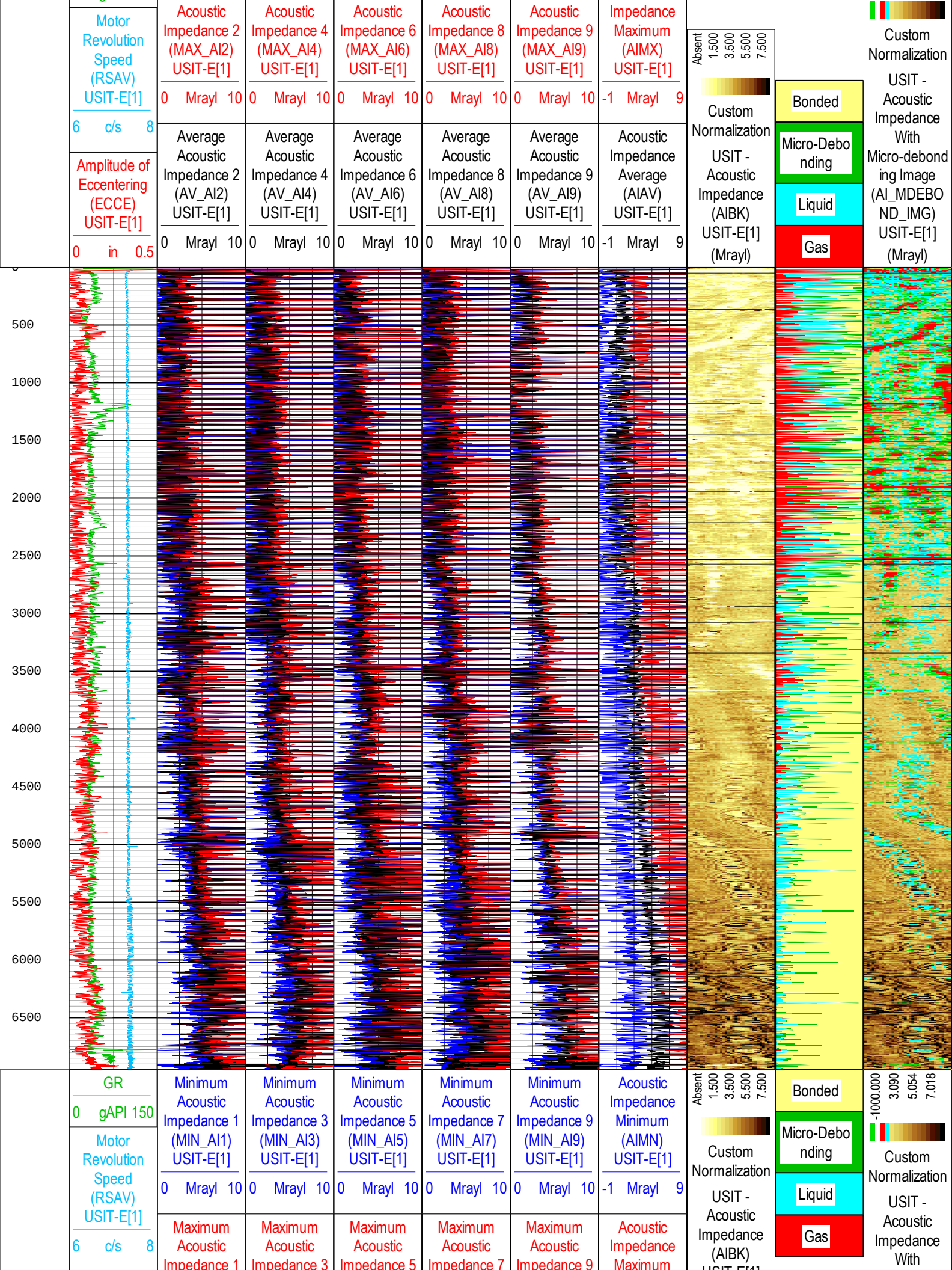
Minimum Acoustic Impedance 1 (MIN_AI1) USIT-E[1]	Minimum Acoustic Impedance 3 (MIN_AI3) USIT-E[1]	Minimum Acoustic Impedance 5 (MIN_AI5) USIT-E[1]	Minimum Acoustic Impedance 7 (MIN_AI7) USIT-E[1]
0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10
Maximum Acoustic Impedance 1 (MAX_AI1) USIT-E[1]	Maximum Acoustic Impedance 3 (MAX_AI3) USIT-E[1]	Maximum Acoustic Impedance 5 (MAX_AI5) USIT-E[1]	Maximum Acoustic Impedance 7 (MAX_AI7) USIT-E[1]
0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10
Average Acoustic Impedance 1 (AV_AI1) USIT-E[1]	Average Acoustic Impedance 3 (AV_AI3) USIT-E[1]	Average Acoustic Impedance 5 (AV_AI5) USIT-E[1]	Average Acoustic Impedance 7 (AV_AI7) USIT-E[1]
0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10

Minimum Acoustic Impedance 2 (MIN_AI2) USIT-E[1]	Minimum Acoustic Impedance 4 (MIN_AI4) USIT-E[1]	Minimum Acoustic Impedance 6 (MIN_AI6) USIT-E[1]	Minimum Acoustic Impedance 8 (MIN_AI8) USIT-E[1]	Minimum Acoustic Impedance 9 (MIN_AI9) USIT-E[1]	Acoustic Impedance Minimum (AIMN) USIT-E[1]
0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	-1 Mrayl 9
Maximum	Maximum	Maximum	Maximum	Maximum	Acoustic

GR

0 gAPI 150

-1000.000 3.090 5.054 7.018


Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8
Amplitude of Eccentering (ECCE) USIT-E[1]
0 in 0.5
Acoustic Impedance 2 (MAX_AI2) USIT-E[1]
0 Mrayl 10
Acoustic Impedance 4 (MAX_AI4) USIT-E[1]
0 Mrayl 10
Acoustic Impedance 6 (MAX_AI6) USIT-E[1]
0 Mrayl 10
Acoustic Impedance 8 (MAX_AI8) USIT-E[1]
0 Mrayl 10
Acoustic Impedance 9 (MAX_AI9) USIT-E[1]
0 Mrayl 10
Impedance Maximum (AIMX) USIT-E[1]
-1 Mrayl 9
Average Acoustic Impedance 2 (AV_AI2) USIT-E[1]
0 Mrayl 10
Average Acoustic Impedance 4 (AV_AI4) USIT-E[1]
0 Mrayl 10
Average Acoustic Impedance 6 (AV_AI6) USIT-E[1]
0 Mrayl 10
Average Acoustic Impedance 8 (AV_AI8) USIT-E[1]
0 Mrayl 10
Average Acoustic Impedance 9 (AV_AI9) USIT-E[1]
0 Mrayl 10
Acoustic Impedance Average (AIAV) USIT-E[1]
-1 Mrayl 9
Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Bonded
Micro-Debonding
Liquid
Gas
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
GR
0 gAPI 150
Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8
Minimum Acoustic Impedance 1 (MIN_AI1) USIT-E[1]
0 Mrayl 10
Minimum Acoustic Impedance 3 (MIN_AI3) USIT-E[1]
0 Mrayl 10
Minimum Acoustic Impedance 5 (MIN_AI5) USIT-E[1]
0 Mrayl 10
Minimum Acoustic Impedance 7 (MIN_AI7) USIT-E[1]
0 Mrayl 10
Minimum Acoustic Impedance 9 (MIN_AI9) USIT-E[1]
0 Mrayl 10
Acoustic Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9
Maximum Acoustic Impedance 1
Maximum Acoustic Impedance 3
Maximum Acoustic Impedance 5
Maximum Acoustic Impedance 7
Maximum Acoustic Impedance 9
Acoustic Impedance Maximum
Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1]
Bonded
Micro-Debonding
Liquid
Gas
-1000.000 3.090 5.054 7.018
Custom Normalization
USIT - Acoustic Impedance With

Amplitude of Eccentering (ECCE) USIT-E[1]	(MAX_AI1) USIT-E[1]	(MAX_AI3) USIT-E[1]	(MAX_AI5) USIT-E[1]	(MAX_AI7) USIT-E[1]	(MAX_AI9) USIT-E[1]	(AIMX) USIT-E[1]
0 in 0.5	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	-1 Mrayl 9
	Average Acoustic Impedance 1 (AV_AI1) USIT-E[1]	Average Acoustic Impedance 3 (AV_AI3) USIT-E[1]	Average Acoustic Impedance 5 (AV_AI5) USIT-E[1]	Average Acoustic Impedance 7 (AV_AI7) USIT-E[1]	Average Acoustic Impedance 9 (AV_AI9) USIT-E[1]	Acoustic Impedance Average (AIAV) USIT-E[1]
	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	-1 Mrayl 9
	Minimum Acoustic Impedance 2 (MIN_AI2) USIT-E[1]	Minimum Acoustic Impedance 4 (MIN_AI4) USIT-E[1]	Minimum Acoustic Impedance 6 (MIN_AI6) USIT-E[1]	Minimum Acoustic Impedance 8 (MIN_AI8) USIT-E[1]		
	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10		
	Maximum Acoustic Impedance 2 (MAX_AI2) USIT-E[1]	Maximum Acoustic Impedance 4 (MAX_AI4) USIT-E[1]	Maximum Acoustic Impedance 6 (MAX_AI6) USIT-E[1]	Maximum Acoustic Impedance 8 (MAX_AI8) USIT-E[1]		
	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10		
	Average Acoustic Impedance 2 (AV_AI2) USIT-E[1]	Average Acoustic Impedance 4 (AV_AI4) USIT-E[1]	Average Acoustic Impedance 6 (AV_AI6) USIT-E[1]	Average Acoustic Impedance 8 (AV_AI8) USIT-E[1]		
	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10	0 Mrayl 10		

USIT-E[1] (Mrayl)

Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Goodwin Format: Log (Import of USI Goodwin) Index Scale: 0.1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jul-2016 09:42:27

XYZ

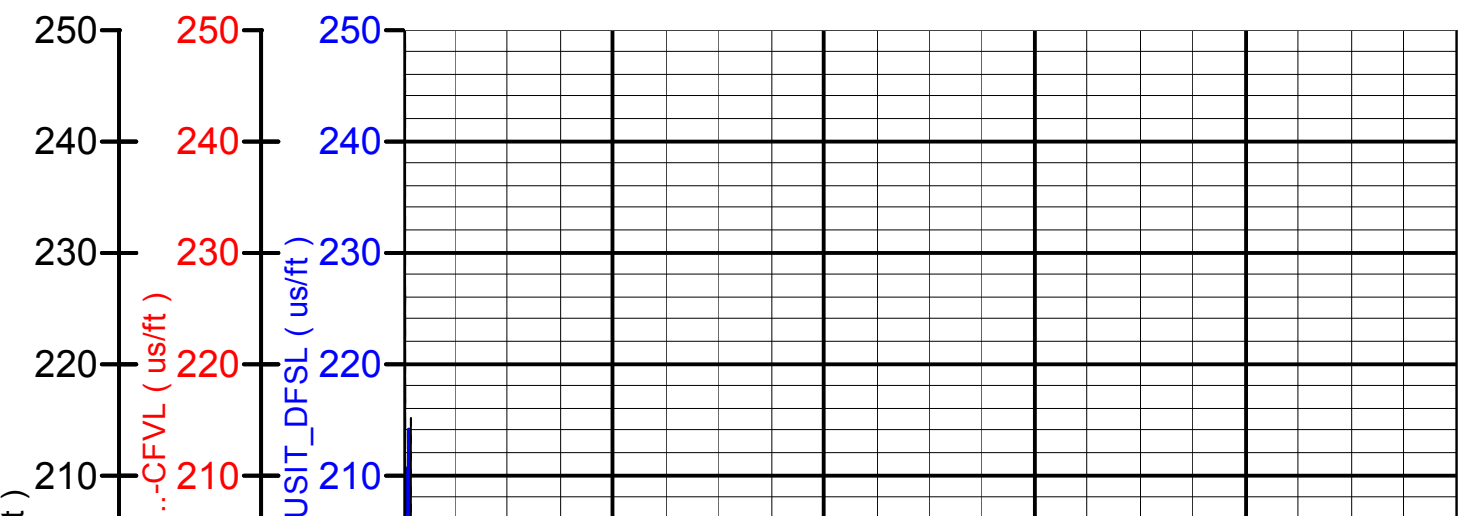
Company:Southern California Gas Company Well:FF-32F (IW 62)
Composite 1:S006

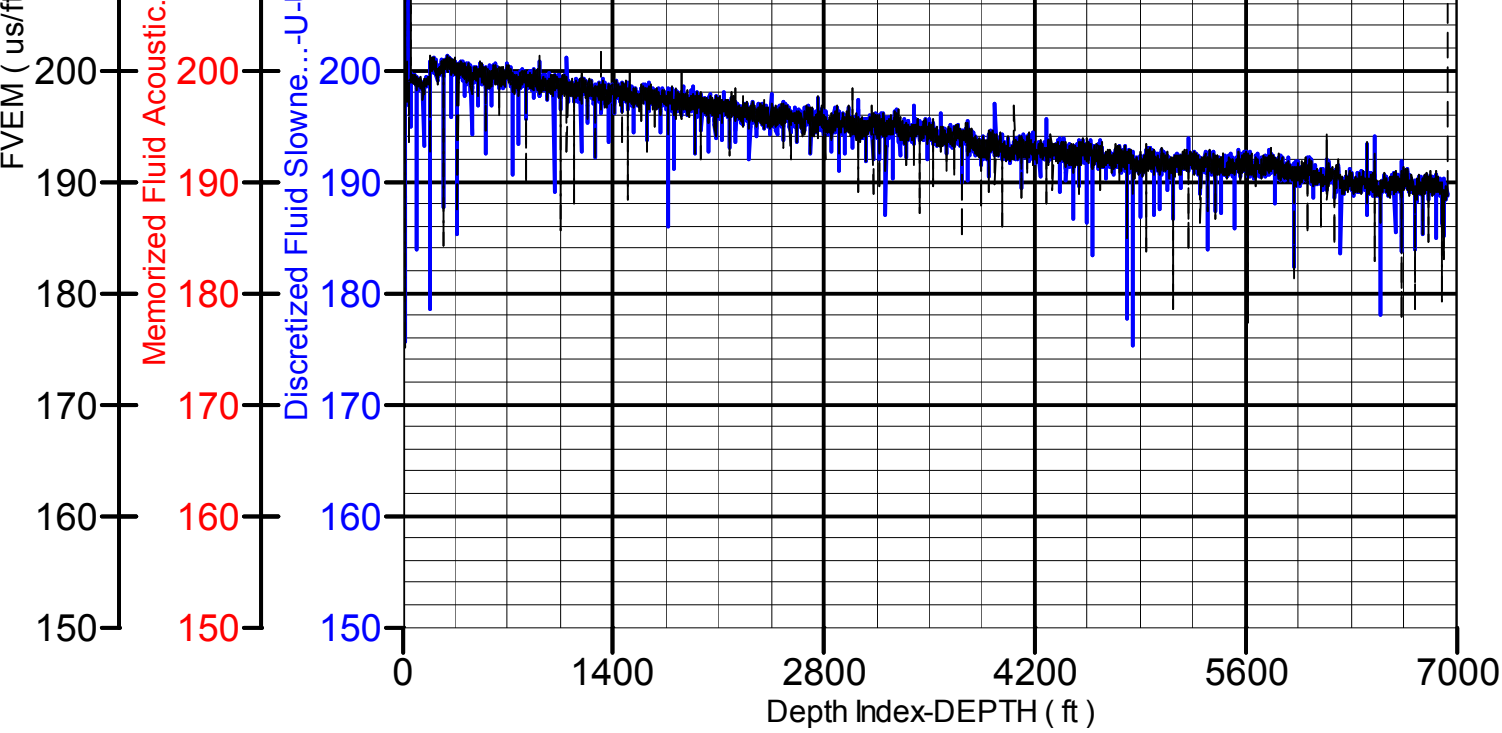
Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 12.25 to 6947.50 ft

DEPTH-U-USIT_DFSL — — - DEPTH-CFVL
— — - DEPTH-FVEM (FVEM : Data Not Found)





XYZ

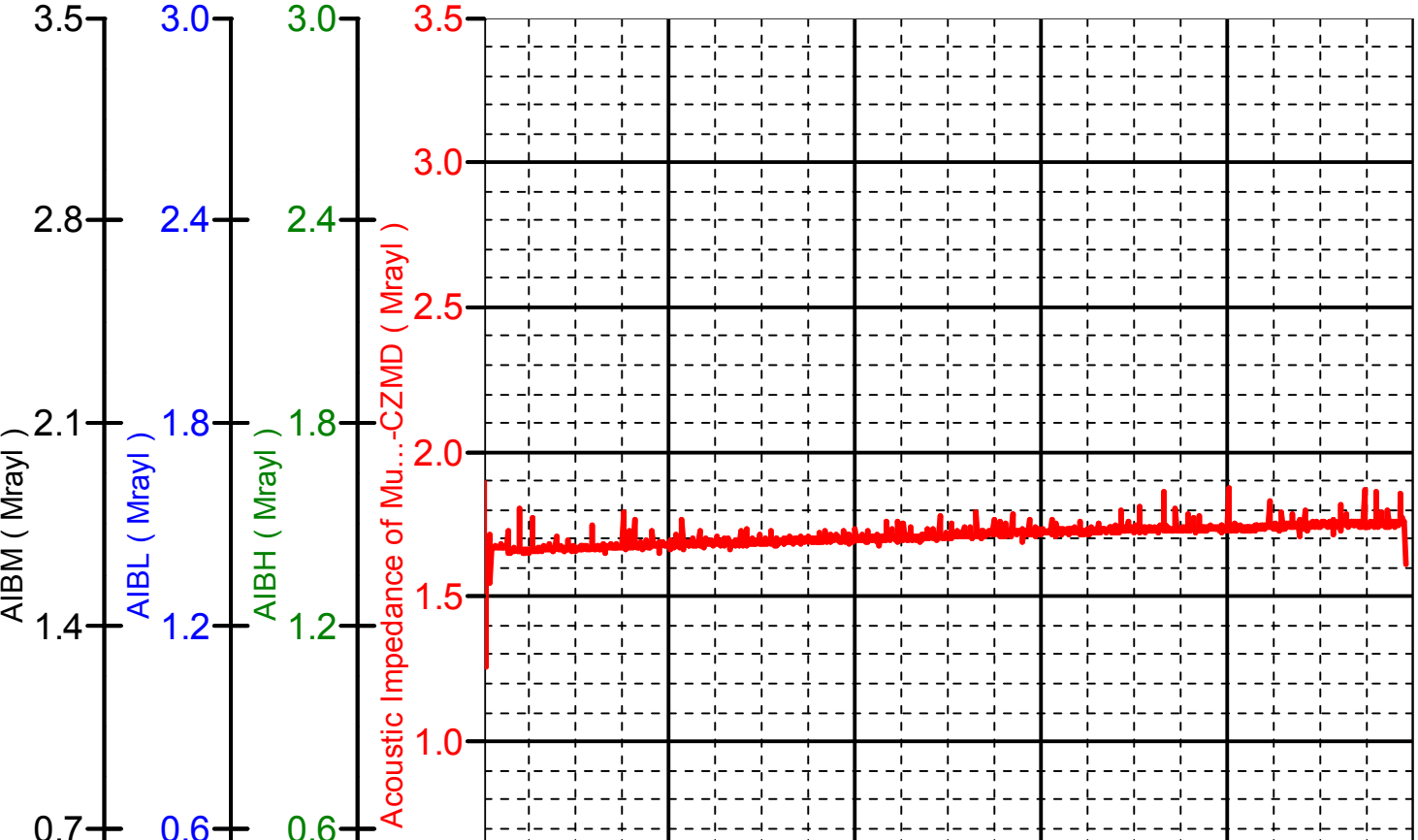
Company:Southern California Gas Company Well:FF-32F (IW 62)
Composite 1:S006

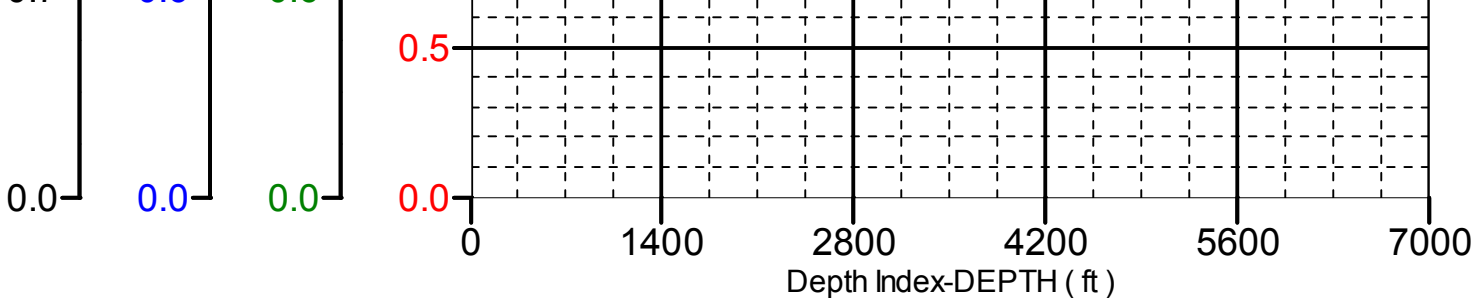
Theoretical Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 12.25 to 6947.50 ft

DEPTH-CZMD
DEPTH-AIBH (AIBH : Data Not Found)
DEPTH-AIBL (AIBL : Data Not Found)
DEPTH-AIBM (AIBM : Data Not Found)




0.0
0.0
0.0
0.5
0.0
0
1400
2800
4200
5600
7000
Depth Index-DEPTH (ft)

Company:	Southern California Gas Company
Well:	FF-32F (IW 62)
Field:	Aliso Canyon
County:	Los Angeles
State:	California

Schlumberger

Ultrasonic Imager

Gamma Ray - CCL

6-5/8" 28# casing